SONIFEX

# All Inclusive New Products **Update** January 2010

## This edition contains **all** updates to the 2008/2009 catalogue

(up to and including January 2010)

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## S1 Radio Broadcast Mixer

**S1 Radio Broadcast Mixer** NEW!

# The small radio mixer that's big on features

**The S1 has an amazing feature set and offers a proper broadcast solution to community, educational and student radio stations that need a versatile, reliable radio broadcast mixer.**

**It has a 'no compromise on quality' approach with excellent mic amps, comprehensive facilities & simple, reliable operation.**

*S1 Digital/Analogue Radio Broadcast Mixer*

- **High performance, ultra-reliable on-air radio mixer.**
- **Low cost.**
- **Easy to use.**
- **Small footprint, flush-mounting or rack-mounting.**
- **Analogue & digital inputs & outputs.**
- **Main stereo output buss plus 2 Aux output busses, pre or post fader selectable.**
- **Rotating rear panel for ease of installation.**
- **Integrated power supply.**
- **Remote outputs per channel.**
- **Fader start of ancilliary equipment such as CD players.**
- **Programmable general purpose I/O.**
- **Monitor muting on mic live.**
- **Mic-live/on-air sign switching.**
- **Monitor outputs for presenter & guest headphones, & speakers.**
- **Bright LED meter display PPM/ VU selectable with separate meterbridge output.**
- **100mm ALPS long-throw faders with control via VCAs.**
- **Separate telco & stereo cleanfeed o/ps for use with a telephone hybrid & codec respectively.**
- **Advanced automation facilities.**
- **Remote control via free SCi software.**

The Sonifex S1 mixer is a high performance compact, low cost, fixed format mixing console designed for on-air radio use. It can be fitted flush into a desk-top or can be rack-mounted by the addition of optional rack ears. The rear connectivity panel can be rotated 90˚ onto the base of the unit providing easier connection to the unit when it is rack-mounted. It has an integral universal switch mode power supply, which uses an IEC inlet.

It maintains the same front panel ease of use found on the Sonifex S2 whilst providing advanced automated features not seen on any other product currently available on the market.

The console consists of ten input channels:

- 2 x mono XLR mic/mono XLR line inputs.
- 1 x mono XLR mic/mono XLR telco input.
- 2 x mono XLR mic/mono XLR line inputs/ stereo ¼" jack unbalanced line input.
- 1 x stereo XLR line/stereo XLR cleanfeed input.
- 2 x stereo XLR line/stereo RCA inputs, one with a 3.5mm stereo aux input.
- 2 x stereo XLR line/stereo SPDIF & Toslink digital inputs.

Providing in total 5 mic, 4 mono line, 10 stereo analogue, 2 stereo digital, 1 telco & 1 stereo cleanfeed inputs which you can switch between.

### Wide-Ranging Input Channels

Input source buttons at the top of each channel strip are used to route the connected source to the mixer busses.

All of the balanced XLR input connectors have a 10dB gain switch on the rear panel for use with unbalanced or low level input sources. The XLR microphone inputs have individual +48V phantom power switches and a gain calibration potentiometer providing up to 65dB of gain for the preamp.

Input channels 1 & 2 have 2 separate XLRs for microphone & balanced line input sources.

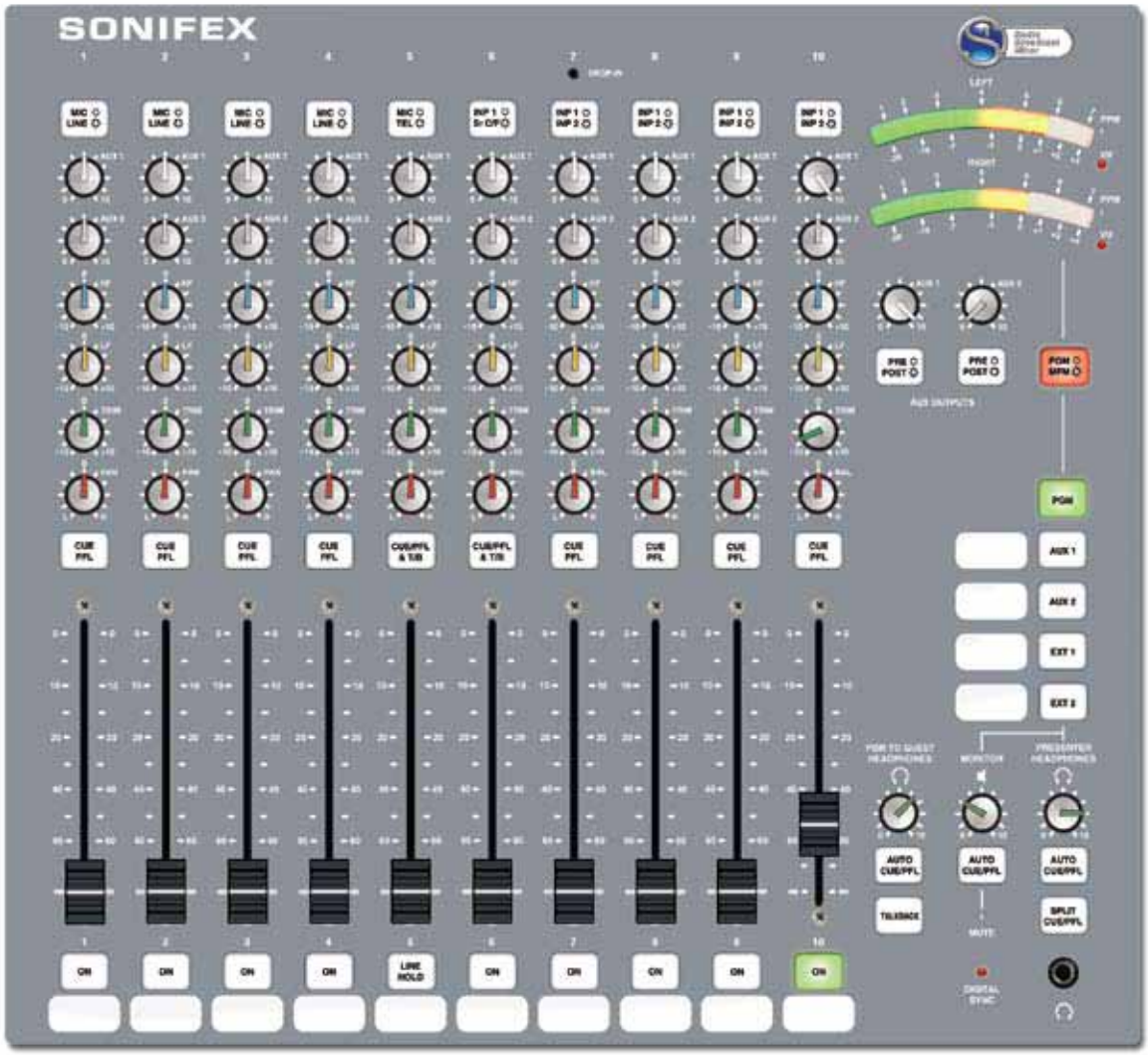
Input channels 3 and 4 use an XLR and a combination XLR/stereo jack connector to allow a microphone input and both a balanced mono or an unbalanced stereo line input to be used.

Input channel 5 acts as microphone input or as a telco input with a dedicated cleanfeed output, with available line hold remote for connection to a telephone hybrid.

Input channel 6 is a balanced stereo line input on XLR together with a stereo cleanfeed input on balanced XLR for use with ISDN codecs.

Input channels 7 & 8 have stereo balanced ▶

## S1 Radio Broadcast Mixer




*S1 Digital/Analogue Radio Broadcast Mixer, Front View*

*S1 Digital/Analogue Radio Broadcast Mixer, Rear View*

## S1 Radio Broadcast Mixer

XLRs and stereo unbalanced phonos on the rear and channel 7 also has a 3.5mm insert jack socket on the front panel for use with an mp3 player/iPod.

Input channels 9 and 10 provide a stereo analogue XLR input and stereo digital S/PDIF and TOSLink optical inputs.

Any channel which has the fader up and the ON button selected is routed to the main PGM output(s).

Gain for each channel is trimmed by the front panel TRIM control providing ± 12dB of gain.

Equalisation is provided on every input channel, allowing up to 7dB cut and boost at HF (6.5 kHz) and LF (100Hz). A PAN/BAL(ance) control is available to facilitate stereo imaging.

The use of VCAs controlled by the ALPS long throw 100mm faders give a smooth, repeatable response and ensures tight stereo tracking while eliminating mechanical and electronic noise.

### Analogue & Digital Outputs

The S1 has a multitude of output connectivity: one balanced stereo XLR PGM output, two balanced stereo AUX outputs on a 9-way D-type socket, a mono clean feed output on balanced XLR (for use with a telephone hybrid), a stereo cleanfeed output on stereo balanced XLRs (for use with an ISDN/IP codec) and monitor outputs for presenter headphones, guest headphones and loudspeakers. Additional outputs are provided for talkback on a 9-way D-type socket and metering using a 15-way D-type socket.

A digital stereo PGM output is provided in XLR AES/EBU or phono S/PDIF formats. The output can be referenced to an internal clock source between 32 kHz and 96 kHz or external synchronisation sources can be connected via S/PDIF, AES/EBU or BNC wordclock. The illuminated DIGITAL SYNC LED shows when the digital output is locked to either an internal or external clock.

### Two Auxiliary Busses

The S1 has two Auxiliary busses that can be configured in either pre-fade or post-fade mode. Each channel can be routed to these busses using the potentiometers provided on each channel strip. Each AUX output has a trim control knob operating between fully attenuated and unity gain. Aux busses can be used for a wide range of purposes including recording telephone conversations, generating different mixes for output, connecting to audio processing equipment and much more.

### Comprehensive Monitoring

The control room loudspeakers, presenter's headphones, and guest headphones are on 6.35mm stereo jack sockets. Front panel control knobs are used to vary the monitor and headphone levels and the presenter's headphones can be plugged in to the front and rear of the mixer. The control room monitor loudspeaker and headphone levels are variable between 0 (cut off) and 10 (max). An illuminated MUTE LED shows when a live microphone channel has muted the speakers and there are two pairs of MUTE contact outputs available to illuminate a 'MIC LIVE' light.

A five way electronically interlocking switch bank selects the source routed to the speakers and presenter's headphones from either of two external inputs (EXT 1, EXT 2), the PGM, or AUX Outputs. The buttons illuminate to show the selected source, PGM, AUX 1 and AUX 2 in green, EXT 1 and EXT 2 in red. The external inputs can be used for monitoring an off air signal or another studio output.

Green illuminated AUTO CUE/PFL buttons adjacent to each level control allow the monitoring of PFL when an input channel has been selected to CUE/PFL, either to the monitors or headphones.

For the Presenter headphones, SPLIT CUE/PFL can be selected which places the selected source in mono in one ear and PFL in mono in the other.

A pair of bright 21 segment LED meters can be configured to show either VU or PPM metering. The meters show either the PGM output or the selection heard in the presenter's headphones, selectable by PGM/MFM (Meter Follows Monitor) button.

### Talkback

A separate TALKBACK button is provided to allow the Presenter to talk to a Guest. The S1 uses input channel one as the talkback source. Global talkback can also be configured (see the Programmable GPIO section) to allow every mic channel to communicate with the Presenter and Guest headphones.

A separate TALKBACK 9-way D-type socket on the rear panel can be used to connect the talkback output and input to and from other studios.

### Configurable Remotes Per Channel

The remote outputs for each channel are highly configurable providing every possible option required to interface your external equipment to the mixer. Each channel input has its own START and STOP remote controls, except the microphone inputs which have only START outputs. (If you wanted a MIC stop control signal, you could configure this using a GPIO). Each remote can be configured to be triggered from a variety of sources, including the ON button and the CUE/PFL Button. The remotes can be set-up to be either pulsed or continuous latched outputs, and if in pulsed mode the ON button has the capability to produce repeated start pulses on additional ON button presses, when the channel is ON with the fader up.

In the case of the Telco & Stereo Cleanfeed outputs you may want to generate start and stop remotes independently of the position of the fader, so that the hybrid or codec can be triggered to connect before the channel is opened. This is possible in 'Telco Mode' where a 'start' is sent when the ON button is initially pressed & a 'stop' is sent when the ON button is pressed again, turning the channel selection off. In addition the channel can be configured to show the state of the external equipment, e.g. using a tally back GPI signal from an automation system, the ON button can flash green when the end of a song is being reached.

### Programmable GPIOs

The S1 also has five General Purpose Inputs/Outputs (GPIO's) available. Each input/output has been designed to be very versatile & almost any operation with the mixer can be achieved when utilising them. A GPI can be configured using the SCi software to perform up to 10 different operations from a single input. For example, in an automated playout situation, you may

## S1 Radio Broadcast Mixer

want to:

- Force 4 channels ON with the faders forced up.
- Force 4 channels to stereo Line Input.
- Mute the Control Room Monitors.

This configuration would use 9 of the 10 operations available for an individual GPI.

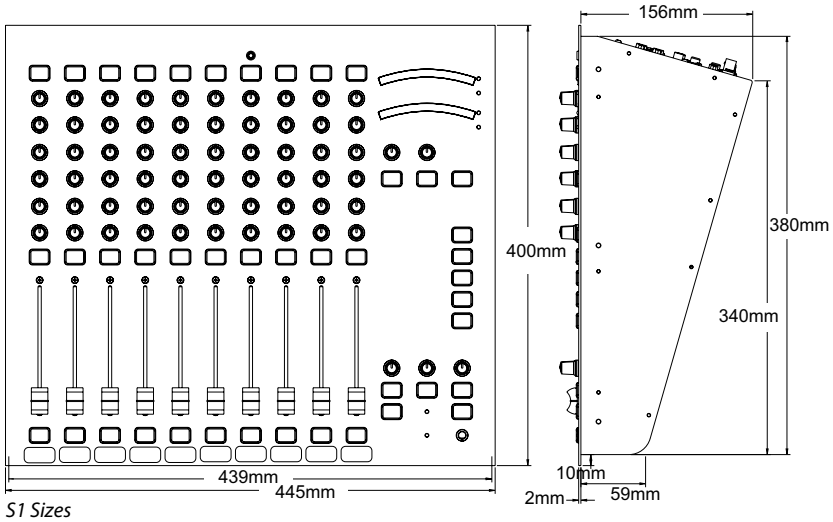
The GPOs are equally powerful. The outputs can be configured to be pulsed or continuous, and active high or low. An output can be generated based on actions required. For example, a GPO can be configured to generate a global talkback function with a set-up so that:

- When Mic 2, Mic 3 & Mic 4 are all not live, generate a GPO continuous output.

The GPO could then be linked back into one of the GPI's with the input configured to:

- Force PFL on Mics 2, 3 & 4.
- Enable Auto CUE/PFL on Guest H/phones.

This would allow the guests to freely talk to each other until one of their microphones goes live. This is just an example of the potential uses of the programmable GPIOs.




*S1 Sizes*

### Remote Control & Configuration Using SCi Software

The S1 mixer is highly configurable and has numerous options allowing the mixer configuration to be tailored to your requirements. Using the freely available Sonifex SCi software, every parameter of the mixer can be set up with ease.

*S1-RCK Optional S1 9U 19" Rack Ears*

**Audio Specification for S1**

| | |
|---|---|
| **Input / Output Impedances** | |
| Mic Input: | > 1k5Ω electronically balanced |
| Mono Line Input: | > 20kΩ electronically balanced |
| Stereo Line Input: | > 20kΩ electronically balanced |
| PGM Output: | < 50Ω electronically balanced |
| Monitor Outputs: | < 75Ω unbalanced |
| AES Input/Output: | 110Ω |
| S/PDIF Input/ Output: | 75Ω |
| BNC Wordclock Input: | 50Ω |
| **Input / Output Gain Range** | |
| Mic Input: | Preset pot +21dB to +64dB ref -50dBu, TRIM pot ± 12dB |
| Mono Line Input: | Switch 0dB to +10dB ref 0dBu, TRIM pot ± 12dB |
| Stereo Line Input: | Switch 0dB to +10dB ref 0dBu, TRIM pot ± 12dB |
| Telco Input: | Switch 0dB to +10dB ref 0dBu, TRIM pot ± 12dB |
| Stereo Cleanfeed Input: | Switch 0dB to +10dB ref 0dBu, TRIM pot ± 12dB |
| Digital Input: | 0dBFS = +18dBu on input; TRIM pot ± 12dB allowing 0dBu to +24dBu |
| Digital Output: | 0dBFS = +18dBu |
| **Frequency Response** | |
| Mic Input: | 40Hz to 20kHz –1dB, +0dB |
| Line Inputs: | 20Hz to 20kHz –0.5dB, +0dB |
| RCA Inputs: | 20Hz to 20kHz –0.5dB, +0dB |
| **Noise (20Hz to 20kHz)** | |
| Mic Input E.I.N.: | -130dB with 150Ω source. |
| Stereo Inputs | -92dBu ref 0dB (fader down, no routing)<br>-91dBu (fader down, one channel routed)<br>-86 dBu (unity gain, one channel routed)<br>-83 dBu (unity gain, two channels routed) |

| | |
|---|---|
| **Distortion** | |
| Total Harmonic Distortion: | 0.015% at 1kHz, 0dBu<br>0.015% at 10kHz, 0dBu |
| **Crosstalk** | |
| Inter-Channel: | < -80dBu typically |
| **Equalisation** | |
| LF: | Shelving at 100Hz ± 7dB |
| HF: | Shelving at 6.5kHz ± 7dB |
| **Range** | |
| Pan Range: | Off/-3dB centre/off |
| Balance Range: | ± 6dB |
| **Common Mode Rejection Ratio** | |
| Mic Input: | >60dB typically |
| **Digital I/O** | |
| Sync Input Sample Rate Range: | 32kHz – 96kHz |
| Output Sample Rates: | 32kHz, 44.1kHz, 48kHz, & 96kHz (Using Onboard Clock) |
| Output Sample Width: | 24 bit |
| **Output** | |
| Headphone Output Load: | >45 ohms, recommended 400 |
| Maximum Output (Analogue): | +26dBu balanced into 2k or greater |
| **Rear Panel Switches** | |
| Phantom Power: | +48V individual per mic input |
| Gain Switch: | +10dB per XLR balanced mono & stereo input & EXT 1, EXT 2 inputs |
| **Input & Output Connections** | |
| Analogue Inputs: | 5 x Microphone XLR 3 pin sockets<br>2 x Mono line XLR 3 pin sockets<br>2 x Mono/stereo line combi XLR 3 pin sockets & 6.35mm stereo jack sockets<br>1 x Telco XLR 3 pin socket<br>5 x Stereo line pairs XLR 3 pin sockets<br>2 x Stere line pairs phono sockets<br>1 x Stereo cleanfeed pair XLR 3 pin sockets<br>1 x Stereo insert, 3.5mm jack socket |
| Digital Inputs: | 2 x S/PDIF phono sockets,<br>2 x TOSLink optical connectors |
| Analogue Outputs: | |
| PGM: | 2 x XLR 3 pin plug (balanced) |
| AUX: | 9-way 'D'-type socket (balanced) |
| TELCO: | XLR 3 pin plug (balanced) |
| STEREO CLEANFD: | 2 x XLR 3 pin plug (balanced) |
| Monitor Outputs: | 6.35mm stereo jack sockets (2 x Presenter, 1 x Guest, 1 x Monitor) |
| Digital Outputs: | AES/EBU XLR 3 pin plug (balanced) or S/PDIF phono socket. |
| Digital Sync Inputs: | Wordclock on BNC, AES/EBU on XLR socket and S/PDIF on phono socket. |
| EXT Inputs: | 9-way 'D'-type socket |
| Mono Remotes: | 25-way 'D'-type plug |
| Stereo Remotes: | 25-way 'D'-type plug |
| Meterbridge Port: | 15-way 'D'-type socket |
| Talkback Interface: | 9-way 'D'-type socket |
| RS232 Serial Port: | 9-way 'D'-type socket |
| Mains Input: | Filtered IEC, continuously rated 85-264VAC, 47-63Hz, 45w nominal, 50w peak |
| Fuse Rating: | Anti-surge fuse 2A 20 x 5mm |
| **Equipment Type** | |
| S1: | S1 radio broadcast mixer |
| **Physical Specification** | |
| Dimensions (Raw): | 44.5cm (W) x 40.0cm (D) x 15.6cm (H)<br>17.5" (W) x 15.75" (D) x 6.1" (H) |
| Cut-Out Dimensions: | 44.0cm, 17.3" (W) x 38.1cm, 15" (D) both dims +0.2cm, -0cm |
| **Accessories** | |
| S1-RCK: | Optional S1 9U rack ears. |

**For flowcharts of the mixer & more detailed info, please go to the Sonifex website: www.sonifex.co.uk**

## Redbox - Tone Generators

### RB-TGHD(B or X) Multi-Channel HD Tone Generator

*RB-TGHDB Multi-Channel HD Tone Generator*

The RB-TGHD is an 8 channel audio tone generator that provides line identification for multi-channel audio systems, including 5.1 and 7.1 surround sound typically used in high definition television broadcasts. By using a range of widely accepted industry standard tone sequences such as the EBU R49, GLITS and BLITS tones, channel identification and associated levels can be determined easily. Correct channel configuration in fold-down mixes can also be highlighted when a broadcaster needs to mix several audio channels into a stereo feed.

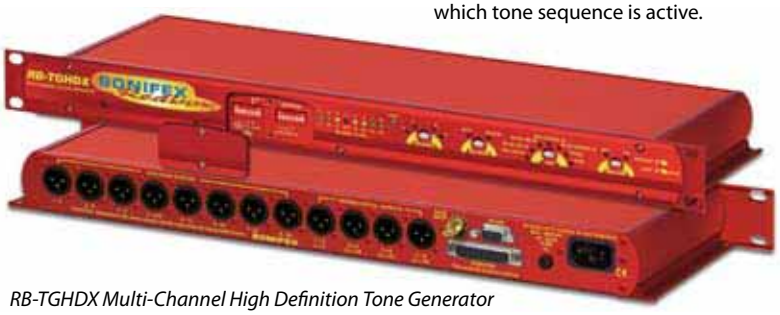
The RB-TGHD caters for 2, 4, 6 and 8 channel configurations and all of the available audio tone sequences for each channel configuration can be cycled through automatically, or selected manually, and a loop mode allows patterns of tones to be repeated. A bank of 4 pushbuttons on the front panel sets these options and the associated LEDs indicate the current setting. A set of 8 LEDs on the front panel indicate which channel is currently outputting audio with the LEDs numbered as both 1-8 and as L, R, C, LFE, Ls, Rs, LR and RR.

The RB-TGHD is available in two variations, each providing both analogue and digital audio outputs. The RB-TGHDX offers balanced AES/EBU digital audio outputs on 3 pin XLR connectors and the RB-TGHDB has unbalanced digital audio outputs on BNC connectors. Both types provide 8 balanced analogue outputs on 3 pin XLR connectors.

A word clock synchronising input on BNC connector allows the digital outputs to be synchronised to an external signal. Optionally, an RB-SYA, RB-SYD or RB-SYE sync board can be fitted, to synchronise the unit to either an analogue or digital video sync signal, or an AES/EBU audio input respectively. A SYNC LED on the front panel indicates when the unit is synchronised to the external signal.

The audio level line-up of the RB-TGHD can be adjusted from 0dBu to +24dBu in 1dBu steps (ref FSD) to suit different environments via the front panel mounted DIPswitches. Changing the audio line-up does not affect the gain relationship between each channel, ensuring that correct levels through the target system can be maintained. These switches also provide settings for digital sample rate which ranges from 32 kHz to 192 kHz, and digital sample width which is either 16 bit or 24 bit.

The serial port allows the RB-TGHD to be connected to a PC running SCi, the Sonifex Serial Control Interface. This allows full control of the unit and the ability to generate a user defined audio tone sequence. In addition, a remote port on the rear provides a simple interface to control the unit and has several outputs to indicate which tone sequence is active.



*RB-TGHDX Multi-Channel High Definition Tone Generator*

| Audio Specification For RB-TGHD(B & X) | |
|---|---|
| Analogue Output Impedance: | <50Ω |
| Digital Output Impedance: | 110Ω balanced<br>75Ω unbalanced |
| Dynamic Range: | >100dB |
| Max Output Level: | +24dBu |
| Distortion & Noise: | <-85dB THD+N at 1kHz |
| Crosstalk: | <-110dB (20Hz to 20kHz) for analogue outputs |
| **Front Panel Controls** | |
| Channels: | 2, 4, 6 or 8 |
| Sequence Mode: | Auto or Manual |
| Sequence: | EBU R49 stereo line-up<br>GLITS stereo line-up<br>BLITS stereo line-up<br>EBU R49 channel ID<br>BLITS channel ID<br>Phase<br>User defined (using SCi) |
| Sequence Loop Mode: | On or Off (enables looping of current sequence) |
| Digital Sample Frequency: | 32kHz, 44.1kHz, 48kHz, 88.2kHz<br>96kHz, 176.4kHz or 192kHz<br>(via DIPswitches) |
| Digital Sample Width: | 16bit or 24bit (via DIPswitches) |
| Audio Line-Up: | 0dBu to +24dBu in 1dB steps ref FSD (via DIPswitches) |
| Channel Identification: | LEDs indicating 1-8 and L, R, C, LFE, Ls, Rs, LR and RR |
| **Rear Panel Connections** | |
| Analogue Outputs: | 8 x XLR 3 pin male (balanced) |
| Digital Outputs: | 4 x AES/EBU XLR 3 pin male (balanced) or<br>4 x BNC female (un-balanced) |
| Digital Input: | Word clock on BNC |
| Remote I/O Port: | 25-way 'D'-type socket<br>17 inputs, 7 tally outputs |
| Serial Comms Port: | 9-way 'D'-type socket |
| Mains Input: | Filtered IEC, continuously rated 85-264VAC,<br>47-63Hz, 60W peak,<br>30W average |
| Fuse Rating: | Anti-surge fuse 1A 20 x 5mm |
| **Equipment Type** | |
| RB-TGHDB: | Multi-channel HD tone generator with BNC digital outputs |
| RB-TGHDX: | Multi-channel HD tone generator with XLR digital outputs |
| **Physical Specification** | |
| Dimensions (Raw): | 48cm (W) x 10.8cm (D) x 4.3cm (H)<br>19" (W) x 4.3" (D) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 59cm (W) x 27.5cm (D) x 11cm (H)<br>23.2 (W) x 10.8" (D) x 4.3" (H) |
| Weight : | Nett: 1.3kg Gross: 1.9kg<br>Nett: 2.9lbs Gross: 4.2lbs |
| **Accessories** | |
| RB-SYA: | Analogue video sync board (NTSC, PAL & SECAM) |
| RB-SYD: | Digital video sync board (SD-SDI & HD-SDI) |
| RB-SYE: | AES/EBU sync board |
| RB-RK3: | 1U Rear panel rack kit for large Redboxes |

## Redbox - Talkback & Communications

### RB-MTV1 Contribution Voiceover Monitor With Talkback

RK3

| Audio Specification For RB-MTV1 | |
|---|---|
| Input Impedance: | 2kΩ nominal balanced MIC input >20kΩ all other inputs. |
| Maximum Input Level: | -10dBu MIC input +26dBu TALK, CUE & PGM inputs |
| Mic Gain Range: | Adjustable +20dB to +80dB |
| E.I.N.: | 130dB |
| Common Mode Rejection: | >60dB typically |
| Low Frequency Roll-Off: | 125Hz @ 6dB/octave |
| Distortion: | 0.01% THD @ 1kHz, ref +8dBu output |
| Phantom Power: | 48V |
| Limiter Threshold: | Adjustable +8dBu to +28dBu |
| Output Impedance: | <50Ω |
| Maximum Output Level: | +26dBu balanced outputs |
| Headphone Output Level: | Drives 150mW into 32Ω to 600Ω headphones |
| Frequency Response: | 20Hz to 20KHz ±0.1dB (ref 1KHz) |

| Rear Panel Connections | |
|---|---|
| Mic Input: | 1 x XLR 3 pin female (Balanced) |
| TALKBACK Input: | 1 x XLR 3 pin female (Balanced) |
| CUE Inputs: | 2 x XLR 3 pin female (Balanced) |
| PGM Inputs: | 2 x XLR 3 pin female (Balanced) |
| Output 1: | 1 x XLR 3 pin male (Balanced) |
| Output 2: | 1 x XLR 3 pin male (Balanced) |
| TALK (LAZY) Output: | 1 x XLR 3 pin male (Balanced) |
| Headphone Outputs: | 2 x ¼" (6.35mm) A-gauge 3-pole stereo jack sockets |
| Remote I/O Port: | 9-way 'D'-type socket |
| Mains Input: | Filtered IEC, 110V-120V, or 220-240V switchable, fused, 9W maximum |
| Fuse Rating: | Anti-surge fuse 100mA 20 x 5mm (230VAC)<br>Anti-surge fuse 250mA 20 x 5mm (115VAC) |

| Equipment Type | |
|---|---|
| RB-MTV1: | Contribution voiceover unit with talkback |

| Physical Specification | |
|---|---|
| Dimensions (Raw): | 48cm (W) x 10.8cm (D) x 4.3cm (H)<br>19" (W) x 4.3" (D) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 58.5cm (W) x 22.5cm (D) x 7cm (H)<br>23" (W) x 8.9" (D) x 2.8" (H) |
| Weight : | Nett: 1.3kg Gross: 1.9kg<br>Nett: 2.9lbs Gross: 4.2lbs |

| Accessories | |
|---|---|
| RB-RK3: | 1U Rear panel rack kit for large Redboxes |

The RB-MTV1 contribution voiceover monitor is a 1U rack-mount designed to be used in voice-over booths, news booths, commentary locations, for continuity announcements and for any other similar applications where voice needs to be added to programme content and then monitored. Programme feeds, auxiliary feeds and a talkback feed can be taken and monitored.

The RB-MTV1 has four inputs and two outputs. It has a mono microphone input on XLR with switched coarse gain and variable fine gain control using a multi-turn preset potentiometer to give an overall gain range from +20dB to +80dB. There is also a switched LF rumble filter, switched +48V phantom power and switched level limiting control. A rear-panel multi-turn preset potentiometer allows adjustment of the threshold at which the limiter begins to operate, from -8dBu to +26dBu. There is an indication of the limiter activity using a blue LED and the microphone level is monitored by a simple 5 LED meter. The meter can be configured to either show the MIC signal activity in normal operation, i.e. when TALK is pressed the meter is off, or the meters can permanently show the MIC activity even when the TALK button is on or the MIC button is off.

There is a mono balanced TALKBACK input on XLR. There are two balanced XLR stereo inputs, CUE and programme (PGM) each with a 10dB input gain switch to facilitate the use of unbalanced sources such as from PC audio cards, domestic CD players, etc.

Each of these inputs, MIC, TALKBACK, CUE and PGM can be mixed and monitored in the front and rear headphone outputs with individual volume controls. Which of the inputs is presented to the headphone outputs can be configured using two banks of DIPswitches on the underside of the unit, one bank for audio that is heard in the left ear piece and one bank for audio monitored in the right ear piece. For example, the left and right PGM inputs can be sent to the right ear-piece and all other signals to the left ear-piece, or the TALK signal could be sent to the right ear-piece and all other signals to both ear-pieces. In this way, you can configure the unit for your particular application on installation. If a presenter doesn't like to hear themselves in their headphones when using the TALK button, there is also a DIPswitch option to mute the mic signal to the headphones.

There are two mono balanced outputs. The processed microphone signal is fed to the two outputs when the latching front panel MIC button is active - the button illuminates when active.

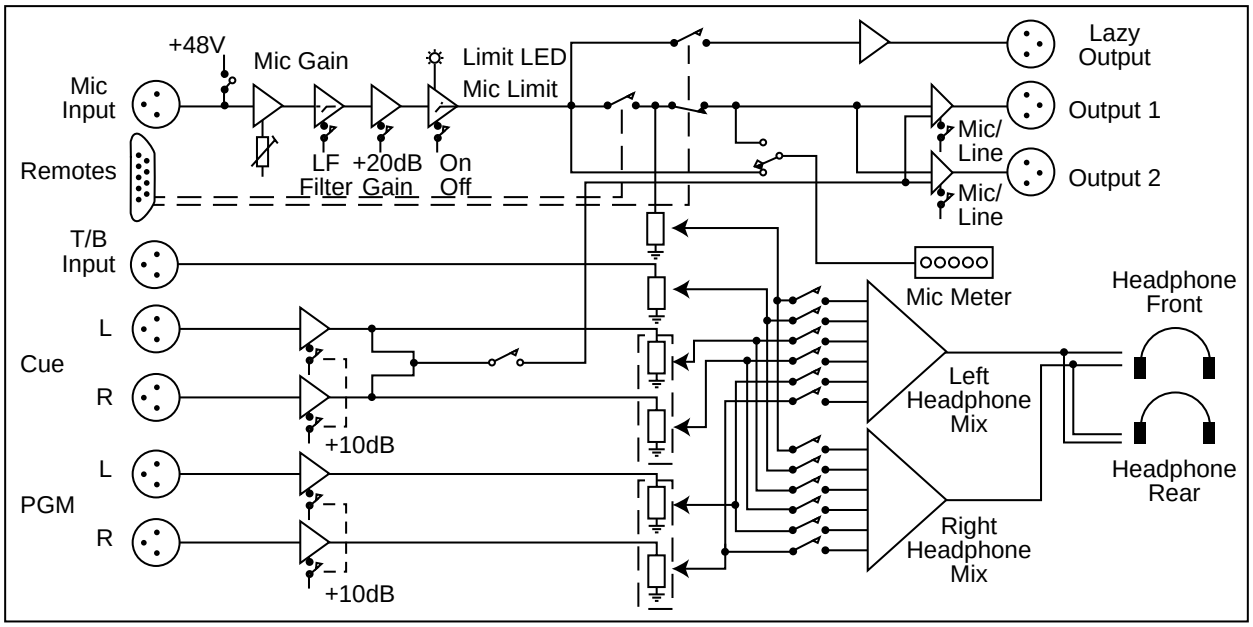
The two main outputs can be independently switched to be at 'Line' or 'Mic' level outputs using rear panel push switches. Setting the output to a microphone level allows the unit to be inserted into the microphone channel of a mixer. There is an option to permanently enable the MIC button, even when remotely controlled, for occasions when you always want the MIC channel left open. Additionally, there is an option to mix the CUE input as a mono feed to the outputs permanently.

The front panel TALK button is a momentary push switch that routes the processed microphone signal to the "LAZY" TALK output, whilst disconnecting it from the main outputs, allowing the operator to talk to a colleague. This enables the unit to be used as a talkback intercom between two or more studios.

There is a rear panel remotes connector giving remote control of the two front panel MIC and TALK buttons and opto-isolated tallies of their status.

A red LED on the front panel of the unit indicates when power is present.

## Redbox - Talkback & Communications




*RB-MTV1 Block Diagram*

## Redbox - Synchronisers, Delays & Silence Detectors

### RB-DSD1 Digital Silence Detection Unit

*RB-DSD1 Digital Silence Detection Unit Shown With Optional Sync Input Board*

The RB-DSD1 digital silence detection unit works in a similar way to the Sonifex RB-SD1 analogue silence detection unit, but has AES/EBU, S/PDIF and TOSlink inputs and outputs instead of analogue inputs and output respectively. Designed to switch from one input to another in the event of loss of audio, the unit is ideal at transmitter sites, or after the master output of a studio, to switch in another audio source, or simultaneous broadcast, should a master source fail.

The unit can switch:

- On loss of level of the main input.
- On loss of level on one channel of the main input.
- On loss of synchronisation lock of the main input.

The RB-DSD1 has 2 x digital stereo audio inputs, each one selectable via front panel INPUT1 and INPUT 2 push buttons, from either AES/EBU balanced XLRs, S/PDIF unbalanced phonos or TOSlink unbalanced optical inputs. Sample rate converters on each input mean that sources of different sample rates can be used with the output sample rate being defined independently. Each input is user-defined as either the main source or auxiliary source and both sources are monitored for failure, each having a remote failure alarm. The colour of the INPUT 1 and INPUT 2 push-buttons indicate which input is the main (green) and auxiliary (red) input, with a flashing LED indicating loss of synchronisation.

In the event of the main source dropping below a pre-set level for a pre-determined amount of time, the unit will automatically switch through to the auxiliary signal. The silence detect level is adjustable between -39dBfs and -84dBfs in 3dBfs steps via front panel DIPswitches. The silence interval can be adjusted between 0 seconds and 252 seconds in 2 second steps via another front panel DIPswitch block. A small cover panel can be screwed in place to obscure the DIPswitches to prevent tampering of the settings.

There are 2 stereo outputs to allow for distribution of the selected input to multiple outputs. Each output is available as simultaneous AES/EBU balanced XLRs, S/PDIF unbalanced phonos or TOSlink unbalanced optical outputs. The output sample rates are selectable via rear panel

## Redbox - Synchronisers, Delays & Silence Detectors

- DIPswitches from one of 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz or 192kHz.

The unit has TTL wordclock BNC and AES/EBU XLR synchronising inputs as standard and optionally, the RB-SYA and RB-SYD synchronisation boards can be fitted to synchronise the unit to analogue or digital video signals. A front panel DIPswitch block is used to decide whether the unit is synchronised to Input1, Input2, the AES/EBU sync input, the wordclock sync input or an optional video sync board. A front panel SYNC button selects the synchronisation mode of the unit and the button flashes whenever the unit is not synchronised to an incoming sync signal. Selectable sync modes are as follows:

### Master Mode

In this mode the digital output sample rate is simply set by, and locked to, the internal on-board clock generator. No sync signal is used or required.

### Auto Sync Mode

In this mode the digital output sample rate follows the selected sync input. When the sync signal is not present the output sample rate will be set by, and locked to, the internal on-board clock generator at the selected output frequency.

### Auto Lock Mode

The digital output sample rate follows the sync input. If the sync signal is removed then the output sample rate will be set by, and locked to, the internal on-board clock generator at the closest frequency available to the previous sync input.

### Slave Mode

In this mode the digital output sample rate follows the sync input. When the sync signal is not present the digital output is turned off.

The unit can operate in 2 modes - automatic or manual, selectable using a rear panel DIPswitch. In both modes it will automatically switch over to the auxiliary source on detecting silence. When the main signal is again detected it will either return to the main signal automatically or manually depending on the mode chosen. In manual mode, the front panel RESTORE button is used to return to the main signal.

The RB-DSD1 has a number of remote operational features. Remote outputs provide separate relay contact closures for failure of the main and auxiliary inputs. You can also remotely select between auto and manual mode (with tally output), action the signal RESTORE, set the silence detection delay to be 2mins 5 seconds and define which input is the main input (with tally output). You can remotely start and stop another piece of equipment on alarm failure and there is an option to set the remote start output as either momentary or latched.

The unit can be configured to alarm when either the left or right channel of the main input source fails, or if the whole stereo signal fails. Additionally, if one channel of a stereo signal is lost, you can define whether to mute the lost channel, or whether to mix the remaining channel to the lost side, effectively creating a mono signal. If the main source synchronisation is lost, you can define whether the unit switches to the auxiliary input immediately, or whether to treat the signal as silence to be detected and then switched based on the unit's silence detection settings.

Front panel LED indicators by the INPUT 1 and INPUT 2 buttons show individually left and right programme and alarm conditions for both the main and auxiliary inputs.

A powerful feature of the RB-DSD1 is that by using the Sonifex SCi serial software, the unit can be programmed for different delay durations, levels and switching functions so that you can programme the unit for your specific application. A front panel DIPswitch configures the unit to be controlled serially and a front panel LED indicates serial operation. Contact Sonifex for further information if you have a particular requirement that isn't catered for by the RB-DSD1 as standard.

The RB-DSD1 has been designed to have a passive signal path through the main input, so if power to the unit fails, signal input 1 is routed to output 1 and signal input 2 is routed to output 2. This is essential for applications such as installation at transmitter sites, where a power failure to the unit should not prevent the audio input signal from being output to the transmitter.

| Audio Specification For RB-DSD1 | |
|---|---|
| **Audio Specification** | |
| Dynamic Range: | >138dB |
| Distortion and Noise: | <-137dB THD + N at 1kHz, ref 0dB FS |
| Input & Output Impedances: | 110Ω ±20% AES/EBU balanced I/O<br>75Ω ±5% S/PDIF unbalanced I/O<br>75Ω ±5% TOSlink unbalanced I/O<br>50Ω BNC TTL word clock input |
| Signal Level: | Balanced: 3V/10V peak to peak min/max<br>Unbalanced: Min 0.5V±20% peak to peak |
| Sample Frequencies: | 32, 44.1, 48, 88.2, 96,176.4 or 192kHz |
| Bit Depth: | Up to and including 24 bit |
| **Front Panel Operational Controls & Indicators** | |
| Digital Input Select: | AES/EBU, S/PDIF or TOSlink optical via INPUT 1 or INPUT 2 push-buttons |
| Sync Input Select: | AES/EBU, wordclock, INPUT 1, INPUT 2 or video board, via front panel DIPswitch |
| Sync Mode Select: | Master, slave, auto or auto lock, via SYNC push-button |
| Alarm Threshold: | -39dBfs to -84dBfs in 3dBfs steps via front panel DIPswitches |
| Silence Detect Duration: | 0 - 252 seconds in 2 second intervals via front panel DIPswitches |
| Detection Type: | Mono or stereo, via front panel DIPswitch |
| Restore Control: | Manual restore button & mode indication LED |
| Indicators: | Program and alarm indicators for left and right sources for both main and auxiliary inputs |
| **Rear Panel Operational Controls** | |
| Master Frequency Select: | 32, 44.1, 48, 88.2, 96,176.4 or 192kHz via rear panel DIPswitches |
| Input Select: | Main input from INPUT 1 or INPUT 2 via DIPswitch |
| Restore Mode: | Automatic or manual, via DIPswitch |
| Remote Start: | Latched or momentary, via DIPswitch |
| Channel Loss: | Mute channel or mix remaining, via DIPswitch |
| Sync Loss: | Switch immediately or treat as silence delay, via DIPswitch |
| **Connections** | |
| Digital Inputs: | 2 x AES/EBU XLR 3 pin female<br>2 x S/PDIF RCA phono<br>2 x TOSLink optical input |
| Digital Outputs: | 2 x AES/EBU XLR 3 pin plug<br>2 x S/PDIF RCA phono socket<br>2 x TOSLink optical output |
| Sync Inputs: | 1 x AES/EBU XLR 3 pin female<br>1 x Word Clock BNC<br>1 x Video Input (optional) |
| Remote I/O Port: | 15 way D-type plug |
| Serial Port: | RS232, 9 way D-Type |
| Mains Input: | Universal filtered IEC, continuously rated 85-264VAC @47- 63Hz, max 10W |
| Fuse Rating: | Anti-surge fuse 2A 20 x 5mm |
| **Equipment Type** | |
| RB-DSD1: | Digital silence detection unit |
| **Physical Specifications** | |
| Dimensions (Raw): | 48cm (W) x 10.8cm (D*) x 4.2cm (H) (1U)<br>19" (W) x 4.3" (D*) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 59cm (W) x 27.5cm (D) x 11cm (H)<br>23.2" (W) x 10.8 (D) x 4.3" (H) |
| Weight: | Nett: 1.4kg Gross: 2.0kg<br>Nett: 3.1lb Gross: 4.4lb |
| **Accessories** | |
| RB-SYA: | Analogue video sync board (NTSC, PAL & SECAM) |
| RB-SYD: | Digital video sync board (SD-SDI & HD-SDI) |
| RB-RK3: | 1U Rear panel rack kit for large Redboxes |

* Note that this product is deeper than standard Redboxes

## Redbox - Digital Mixer

### RB-DMX4 4 x 4 Channel Digital Audio Mixer/Router

NEW!

*RB-DMX4 4 x 4 Channel Digital Audio Mixer/Router (With RB-SYD Video Sync Board)*

The RB-DMX4 is a digital mixer capable of mixing or routing 4 mono input channels into 4 mono outputs, or 2 stereo inputs into 2 stereo outputs. The inputs are sample rate converted to allow sources of different sample rates to be mixed. The flexible Mix Matrix allows for a wide variety of mixing options and creativity, using 4 blocks of 4 way DIPswitches to select which inputs are mixed or routed to which outputs.

The RB-DMX4 has 4 x digital mono audio inputs, selectable in pairs via front panel INPUTS 1 & 2 and INPUTS 3 & 4 push buttons, from either AES/EBU balanced XLRs, S/PDIF unbalanced phonos or TOSlink unbalanced optical inputs. Sample rate converters on each input mean that sources of different sample rates can be used with the output sample rate being defined independently. The colour of the INPUTS 1 & 2 and INPUTS 3 & 4 push-buttons indicate whether the input source is synchronised (no colour) or not (flashing green and red).

Each input has a trim pot, which can be used to attenuate the input signal. This allows for a perfect mix of channels at different audio levels. Audio presence LEDS around each input button give an indication of input audio level. There is one LED for each channel. There are also 4 presence LEDS around the MONITOR button which give an indication of output level. Additional gain can be added by accessing the OUTPUT GAIN mode.

There are 2 stereo outputs which are available as simultaneous AES/EBU balanced XLRs, S/PDIF unbalanced phonos or TOSlink unbalanced optical outputs. The output sample rates are selectable via rear panel DIPswitches from one of 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz or 192kHz.

The unit has TTL wordclock BNC and AES/EBU XLR synchronising inputs as standard and optionally, the RB-SYA and RB-SYD synchronisation boards can be fitted to synchronise the unit to analogue or digital video signals. A rear panel DIPswitch block is used to decide whether the unit is synchronised to Input 1 & 2, Input 3 & 4, the AES/EBU sync input, the wordclock sync input or an optional video sync board. The DIPswitch block also selects the synchronisation mode of the unit and the MONITOR button flashes whenever the unit is not synchronised to an incoming sync signal. Selectable sync modes are as follows:

#### Master Mode

In this mode the digital output sample rate is simply set by, and locked to, the internal on-board clock generator. No sync signal is used or required.

#### Auto Sync Mode

In this mode the digital output sample rate follows the selected sync input. When the sync signal is not present the output sample rate will be set by, and locked to, the internal on-board clock generator at the selected output frequency.

#### Auto Lock Mode

The digital output sample rate follows the sync input. If the sync signal is removed then the output sample rate will be set by, and locked to, the internal on-board clock generator at the closest frequency available to the previous sync input.

| Technical Specification For RB-DMX4 | |
|---|---|
| **Audio Specification** | |
| Dynamic Range: | >138dB |
| Distortion and Noise: | <-137dB THD + N at 1kHz, ref 0dB FS |
| Input & Output Impedances: | 110Ω ±20% AES/EBU balanced I/O<br>75Ω ±5% S/PDIF unbalanced I/O<br>75Ω ±5% TOSlink unbalanced I/O<br>50Ω BNC TTL word clock input |
| Signal Level: | Balanced: 3V/10V peak to peak min/max<br>Unbalanced: Min 0.5V±20% peak to peak |
| Sample Frequencies: | 32, 44.1, 48, 88.2, 96,176.4 or 192kHz |
| Bit Depth: | Up to and including 24 bit |
| **Front Panel Operational Controls & Indicators** | |
| Digital Input Select: | AES/EBU, S/PDIF or TOSlink optical via INPUT 1 & 2 or INPUT 3 & 4 push-buttons |
| Mix Control: | Output mix selection system via front panel DIPswitches |
| Input Gain: | Input gain control for four INPUT channels via potentiometers, from muted (-∞) to unity gain |
| Output Gain: | Adjustable via front panel push switch to 0dB, 3dB, 6dB or 12dB |
| Monitor Select Control: | Headphone monitor channel select and output gain via push button |
| Indicators: | Input and output presence indicators via bicolour LEDS around each push button |
| **Rear Panel Operational Controls** | |
| Master Select: | 32, 44.1, 48, 88.2, 96,176.4 or 192kHz Frequency via rear panel DIPswitches |
| Sync Source Select: | INPUTS 1&2, INPUTS 3&4, AES Sync, Word Clock, Video Sync via rear panel DIPswitches |
| Sync Mode Select: | Master, Auto Sync, Auto Lock, Slave via rear panel DIPswitches |
| Stereo Features: | Stereo gain control and monitor outputs via rear panel DIPswitches |
| Monitor Attenuation: | 12dB Monitor attenuation via rear panel DIPswitches |
| Serial Mode: | Enter serial control mode via rear panel DIPswitches |
| Boot Mode: | Boot up base code or firmware via rear panel DIPswitches |
| **Connections** | |
| Digital Inputs: | 2 x AES/EBU XLR 3 pin female<br>2 x S/PDIF RCA phono<br>2 x TOSLink optical input |
| Digital Outputs: | 2 x AES/EBU XLR 3 pin plug<br>2 x S/PDIF RCA phono socket<br>2 x TOSLink optical output |
| Sync Inputs: | 1 x AES/EBU XLR 3 pin female<br>1 x Word Clock BNC<br>1 x Video Input (optional) |
| Remote I/O Port: | 15 way D-type plug |
| Serial Port: | RS232, 9 pin D-type socket |
| Mains Input: | Universal filtered IEC, continuously rated 85-264VAC@47- 63Hz, max 10W |
| Fuse Rating: | Anti-surge fuse 2A 20 x 5mm |
| **Equipment Type** | |
| RB-DMX4: | 4 x 4 channel digital audio mixer/router |
| **Physical Specifications** | |
| Dimensions (Raw): | 48cm (W) x 10.8cm (D*) x 4.2cm (H) (1U)<br>19" (W) x 4.3" (D*) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 59cm (W) x 27.5cm (D) x 11cm (H)<br>23.2" (W) x 10.8" (D) x 4.3" (H) |
| Weight: | Nett: 1.4kg Gross: 2.0kg<br>Nett: 3.1lb Gross: 4.4lb |
| **Accessories** | |
| RB-SYA: | Analogue video sync board (NTSC, PAL & SECAM) |
| RB-SYD: | Digital video sync board (SD-SDI & HD-SDI) |
| RB-RK3: | 1U Rear panel rack kit for large Redboxes |

* Note that this product is deeper than standard Redboxes

## Redbox - Digital Mixer

### Slave Mode

In this mode the digital output sample rate follows the sync input. When the sync signal is not present the digital output is turned off.

There is a monitor socket on the front panel with a gain pot to allow you to monitor the output of each channel. The monitored channel can be selected via a push button on the front panel which, when held, can also supply up to 12dB of gain. If the level that is being monitored is close to full scale, a 12dB attenuation can be added to the monitor output via a DIPswitch on the rear panel.

The unit can be placed in mono or stereo mode via rear panel DIPswitch. Stereo mode allows you to monitor the two input pairs as stereo channels as well as controlling the input gain as a pair, giving tied audio levels.

The RB-DMX4 has been designed to have a passive signal path through the main input, so if power to the unit fails, signal inputs 1 & 2 are routed to outputs 1 & 2 and signal inputs 3 & 4 are routed to outputs 3 & 4. This is essential for applications such as installation at transmitter sites, where a power failure to the unit should not prevent the audio input signal from being output to the transmitter. Please note that this is not true for the TOSLink outputs which are muted.

The RB-DMX4 can be controlled using Sonifex free software, SCi. Contact Sonifex for further information if you have a particular requirement that isn't catered for by the RB-DMX4 as standard.

## Redbox - Digital Delay

### RB-DD4 4 Channel Digital Audio Delay

NEW!

The RB-DD4 4 channel digital audio delay allows you to delay 4 mono channels of audio independently or together. Each channel delay is user selectable from multiples of common video frame rates, or a user defined value set via the serial interface. The unit is perfect for synchronizing audio to video which has been delayed by processing latency.

Using a front panel button, you can select which channel needs to be delayed. There is also an 'ALL' option which allows the selected delay to be applied to all channels. Then using another front panel button you can select the length of one frame of delay and the multiple of frames to delay by.

The connectivity is incredibly flexible, allowing three different types of connection to each input and output including AES/EBU, S/PDIF and TOSLink. All three different types of output can be used simultaneously. There is a monitor socket on the front panel which allows you to listen to each mono channel, by front panel selection. Pairs of channels can be monitored (1 & 2 or 3 & 4) using a rear panel stereo option. There is also an option to attenuate the monitor by 12dB selectable by rear panel DIPswitch. Audio presence is detected and displayed for each channel around the INPUTS 1 & 2 and INPUTS 3 & 4 buttons.

The flexibility continues with many audio synchronization options. The digital audio output can be synchronized to either input, an additional AES/EBU reference input, a TTL wordclock BNC input or an analogue/SDI video feed if used with an additional RB-SYA or RB-SYD board. Also the output can be synchronized to an on-board master clock, with a selectable frame rate. There are warning indicators on the front panel for loss of lock on both inputs and for the selected external synchronization. Selectable synchronization modes are as follows:

#### Master Mode

In this mode the digital output sample rate is simply set by, and locked to, the internal on-board clock generator. No sync signal is used or required.

#### Auto Sync Mode

In this mode the digital output sample rate follows the selected sync input. When the sync signal is not present the output sample rate will be set by, and locked to, the internal on-board clock generator at the selected output frequency.

#### Auto Lock Mode

The digital output sample rate follows the sync input. If the sync signal is removed then the output sample rate will be set by, and locked to, the internal on-board clock generator at the closest frequency available to the previous sync input.

#### Slave Mode

In this mode the digital output sample rate follows the sync input. When the sync signal is not present the digital output is turned off.

A powerful feature of the RB-DD4 is that by using the Sonifex SCi serial software, the unit can be programmed for different delay durations, levels and switching functions so that you can program the unit for your specific application. A rear panel DIPswitch configures the unit to be controlled serially. Contact Sonifex for further information if you have a particular requirement that isn't catered for by the RB-DD4 as standard.

The RB-DD4 has been designed to have a passive signal path through the main input, so if power to the unit fails, signal inputs 1 & 2 are routed to outputs 1 & 2 and signal inputs 3 & 4 are routed to outputs 3 & 4. This is essential for applications such as installation at transmitter sites, where a power failure to the unit should not prevent the audio input signal from being output to the transmitter. Please note that this is not true for the TOSLink outputs which are muted.

RK3 24 BIT 192 kS/s

*RB-DD4 4 Channel Digital Audio Delay (With RB-SYD Video Sync Board)*

## Redbox - Digital Audio Converters

| Specification For RB-DD4 | |
|---|---|
| **Audio Specification** | |
| Dynamic Range: | >138dB |
| Distortion and Noise: | <-137dB THD + N at 1kHz, ref 0dB FS |
| Input & Output Impedances: | 110Ω ±20% AES/EBU balanced I/O<br>75Ω ±5% S/PDIF unbalanced I/O<br>75Ω ±5% TOSlink unbalanced I/O<br>50Ω BNC TTL word clock input |
| Signal Level: | Balanced: 3V/10V peak to peak min max<br>Unbalanced: Min 0.5V±20% peak to peak |
| Sample Freqs: | 32, 44.1, 48, 88.2, 96,176.4 or 192kHz |
| Bit Depth: | Up to and including 24 bit |
| Max Delay: | 8 secs per mono channel at 32kHz<br>1.33 secs per mono channel at 192kHz |
| Frame Rates (Front Panel): | 23.98fps, 24fps, 25fps, 29.97fps, 30fps, 50fps, 59.94fps, 60fps |
| Frame Rates (SCi Software): | 525/29.97, 625/25, 720/60p, 720/59.94p, 720/50p, 720/30p, 720/29.97p, 720/25p, 720/24p, 720/23.98p, 1035/60i, 1035/59.94i, 1080/60i, 1080/59.94i, 1080/50i, 1080/30p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 1080/30pSF, 1080/29.97pSF, 1080/25pSF, 1080/24pSF, 1080/23.98pSF, 1080/60p, 1080/59.94p, 1080/50p |
| Delay Settable: | 1 to 19 frames (front panel controls)<br>Frames, lines, fields, milliseconds and samples up to total delay time (SCi software) |

| Front Panel Operational Controls & Indicators | |
|---|---|
| Digital Input Select: | AES/EBU, S/PDIF or TOSlink optical via INPUTS 1 & 2 or INPUTS 3 & 4 push-buttons |
| Delay Control: | Delay time selection system via front panel push button |
| Monitor Select Control: | Headphone monitor channel select |
| Indicators: | Input presence indicators via bicolour LEDS around each push button |
| **Rear Panel Operational Controls** | |
| Master Select: | 32, 44.1, 48, 88.2, 96,176.4 or 192kHz Frequency via rear panel DIPswitches |
| Sync Source Select: | INPUTS 1&2, INPUTS 3&4, AES Sync, Word Clock, Video Sync via rear panel DIPswitches |
| Sync Mode Select: | Master, Auto Sync, Auto Lock, Slave via rear panel DIPswitches |
| Stereo Features: | Stereo monitor outputs via rear panel DIPswitches |
| Monitor Attenuation: | 12dB monitor attenuation via rear panel DIPswitches |
| Serial Mode: | Enter serial control mode via rear panel DIPswitches |
| Boot Mode: | Boot up base code or firmware via rear panel DIPswitches |
| **Connections** | |
| Digital Inputs: | 2 x AES/EBU XLR 3 pin female<br>2 x S/PDIF RCA phono<br>2 x TOSLink optical input |
| Digital Outputs: | 2 x AES/EBU XLR 3 pin plug<br>2 x S/PDIF RCA phono socket<br>2 x TOSLink optical output |
| Sync Inputs: | 1 x AES/EBU XLR 3 pin female<br>1 x Word Clock BNC<br>1 x Video Input (optional) |
| Remote I/O Port: | 15 way D-type plug |
| Serial Port: | RS232, 9 pin D-type socket |
| Mains Input: | Universal filtered IEC, continuously rated 85-264VAC@47- 63Hz, max 10W |
| Fuse Rating: | Anti-surge fuse 2A 20 x 5mm |
| **Equipment Type** | |
| RB-DD4: | 4 channel digital audio delay |
| **Physical Specifications** | |
| Dimensions (Raw): | 48cm (W) x 10.8cm (D*) x 4.2cm (H) (1U)<br>19" (W) x 4.3" (D*) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 59cm (W) x 27.5cm (D) x 11cm (H)<br>23.2" (W) x 10.8" (D) x 4.3" (H) |
| Weight: | Nett: 1.4kg Gross: 2.0kg<br>Nett: 3.1lb Gross: 4.4lb |
| **Accessories** | |
| RB-SYA: | Analogue video sync board (NTSC, PAL & SECAM) |
| RB-SYD: | Digital video sync board (SD-SDI & HD-SDI) |
| RB-RK3: | 1U Rear panel rack kit for large Redboxes |

* Note that this product is deeper than standard Redboxes

## Redbox - Video Distribution Amplifiers

### RB-VHDA8 3G/HD/SD-SDI 1 Input, 8 Output Video Distribution Amplifier

The RB-VHDA8 is a high performance, reliable eight way digital video distribution amplifier for re-clocking and distributing a 3G, HD (high definition) or SD (standard definition) SDI source to eight outputs. The unit provides automatic input detection, re-clocking and cable equalisation of the input signal to 100/350 meters (HD/SD) of coax cable.

The full range of 3G, SD and HD standards are supported by the unit allowing PAL and NTSC signals up to 1080p 60Hz to be distributed.

Each output is individually buffered providing separately driven outputs for greater reliability.

As well as an AC power input, the unit also has a 12V DC input for use, for example, in outside broadcast vehicles. Both power inputs can be used to give a dual redundant power supply; whichever voltage is higher will be used.

| Specification For RB-VHDA8 | |
|---|---|
| Compatible Standards: | SMPTE-424M (3G)<br>SMPTE-292M (HD-SDI)<br>SMPTE-259M-AC[1] (SD-SDI)<br>SMPTE 344M[1]<br>DVB-ASI[2] at 270Mb/s |

[1] Other rates will be passed without reclocking.
[2] Non inverted outputs only.

| | |
|---|---|
| Impedance: | 75Ω terminating |
| Equalisation: | Up to 100m of Belden 1694A at 1.485Gbps<br>Up to 350m of Belden 1694A at 270 Mbps |
| Data Rates: | Fully supported: 143, 270, 1483.5, 1485, 2967 & 2970Mbps<br>Passed but not reclocked: 177, 360 & 540Mbps |
| Reclocking & Equalisation: | Automatic |
| Resolution: | Automatic |
| Return Loss: | >15dB at 1500MHz |
| Output Jitter: | <0.2UI |
| Signal Level: | 800mV ±10% |
| **Front Panel Indicators** | |
| Power LED: | Amber indicates power is present, Red indicates detection of valid incoming SDI signal |

| Rear Panel Connections | |
|---|---|
| HD/SD-SDI Video Input: | 1 x BNC (Unbalanced) |
| HD/SD-SDI Video Outputs: | 8 x BNC (Unbalanced) |
| Power Supply: AC: | Filtered IEC, continuously rated 85-264VAC, 47-63Hz, fused, max 10W |
| Fuse Rating: | Anti-surge fuse 2A 20 x 5mm |
| DC: | 12V 300mA max, DC supply, 2.5mm socket fused |
| **Equipment Type** | |
| RB-VHDA8: | 3G/HD/SD-SDI 1 input, 8 output video distribution amplifier |
| **Physical Specification** | |
| Dimensions (Raw): | 48cm (W) x 10.8cm (D) x 4.3cm (H)<br>19" (W) x 4.3" (D) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 58.5cm (W) x 22.5cm (D) x 7cm (H)<br>23" (W) x 8.9" (D) x 2.8" (H) |
| Weight : | Nett: 1.3kg Gross: 1.9kg<br>Nett: 2.9lbs Gross: 4.2lbs |
| **Accessories** | |
| RB-RK3: | 1U Rear panel rack kit for large Redboxes |

## Redbox - Embedders & De-Embedders

# 3G, HD & SD-SDI

**Still in the familiar Redbox chassis offering rackmounting as standard and a universal AC power supply, these new video Redboxes use latest technology components to offer embedding and de-embedding for analogue and digital audio signals into and out of all 3G, HD and SD-SDI video signals, respectively.**

**With simple front panel controls, standard BNC connectivity and remote operation on serial and ethernet ports, there are currently 4 products in the range:**

- **RB-VHEMA8 Embedder, 8 Channel Analogue Inputs**
- **RB-VHDMA8 De-Embedder, 8 Channel Analogue Outputs**
- **RB-VHCMA4 Embedder & De-Embedder, 4 Channel Analogue I/O**
- **RB-VHCMD16 Embedder & De-Embedder, 16 Channel Digital I/O**

## Common Specifications

| SDI Specification | |
|---|---|
| SDI Input: | 1 x BNC, 3G/HD/SD-SDI |
| SDI Outputs: | 2 x BNC, 3G/HD/SD-SDI, Re-clocked |
| Impedance: | 75Ω |
| Output Alignment Jitter: | <0.2UI (3G <0.3UI) |
| Output Level: | 800mV +/- 10% |
| Return Loss: | <15dB at 1500MHz |
| SDI Supported Standards: | 270Mbps, SMPTE-259M-C (SD)<br>1.485 or 1.4835Gbps, SMPTE-292M (HD)<br>2.97 or 2.967Gbps, SMPTE-424M (3G) |
| Supported Video Formats: | 525/59.94 (SMPTE-125M)<br>625/50 (ITU-R BT.656)<br>720p/23.98, 24, 25, 29.97, 30, 50, 59.94, 60 (SMPTE-296M)<br>1035i/59.94, 60 (SMPTE-260M)<br>1080i/50, 59.94, 60 (SMPTE-274M)<br>1080p/23.98, 24, 25, 50, 59.94, 60 (SMPTE-274M)<br>1080pSF/23.98, 24, 25, 29.97, 30 (RP-211) 1080i/50 (SMPTE-295M)1080p/50 (SMPTE-295M) |
| Embedded Audio: | 48kHz, synchronous<br>SMPTE-272M-ABC<br>SMPTE-299M |
| Serial Port: | RS232, 9 way D-type |
| Ethernet Port: | 10/100Mbps |
| Fuse Rating: | Anti-surge fuse 1A 20 x 5mm |
| **Physical Specifications** | |
| Dimensions (Raw): | 48cm (W) x 10.8cm (D*) x 4.2cm (H) (1U)<br>19" (W) x 4.3" (D*) x 1.7" (H) (1U) |
| Dimensions (Boxed): | 59cm (W) x 27.5cm (D) x 11cm (H)<br>23.2" (W) x 10.8" (D) x 4.3" (H) |
| Weight: | Nett: 1.8kg Gross: 2.3kg<br>Nett: 4.0lb Gross: 5.1lb |

* Note that this product is deeper than standard Redboxes

## RB-VHEMA8 3G/HD/SD-SDI Embedder, 8 Channel Analogue Inputs

The RB-VHEMA8 is an 8-channel analogue embedder.

The unit can selectively embed up to 8 analogue channels onto either of the two output video streams which are re-clocked and sent to the SDI outputs. It also has the capability to allow audio groups to be deleted or passed through untouched on each of the two video streams.

The embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and individually buffered SDI outputs. It supports the full range of 3G, SD and HD standards from NTSC and PAL up to 1080p 60Hz.

The analogue inputs full-scale gain settings can be set via jumpers situated inside the unit. Allowable settings are +12dBu, +18dBu and +24dBu for FSD. The balanced and unbalanced input connections are paralleled, allowing one type to be used per input.

| Audio Specification For RB-VHEMA8 | |
|---|---|
| **Front Panel Controls & Indicators** | |
| Embed Bank Select: | Bank 1 or 2 |
| Bank Channel Select: | Channels 1, 2, 3 or 4 |
| Group Select: | Groups 1, 2, 3 or 4 |
| Group Channel Select: | Group channels 1,2,3 or 4 |
| Status: | 1 x SDI input status LED<br>2 x SDI output LEDs<br>4 x Audio group status LEDs |
| **Audio Specifications** | |
| Maximum Input Level: | +27dBu (balanced) |
| Input Impedance: | >10kΩ bridging (balanced) |
| Input Levels: | +12dBu, +18dBu or +24dBu for FSD (jumper selectable) |
| Signal to Noise: | Better than -113dBFS (RMS A-weighted at 24-bit, balanced) |
| Distortion and Noise: | Better than -100dB THD+N at 1kHz (balanced) |
| **Connections** | |
| Analogue Audio Inputs: | 8 input channels via BNC (unbalanced) or D-type socket (balanced) |
| Analogue Audio Connectors: | 8 x BNC<br>2 x 25-way D-type |
| Power Supply: | Universal filtered IEC, continuously rated 85-264VAC @47-63Hz, fused, max 18W |
| **Equipment Type** | |
| RB-VHEMA8 | 3G/HD/SD-SDI embedder, 8 channel analogue inputs |

## RB-VHDMA8 3G/HD/SD-SDI De-Embedder, 8 Channel Analogue Outputs

NEW!

The RB-VHDMA8 is an 8-channel analogue de-embedder.

The unit can selectively de-embed up to 8 channels within any 2 audio groups contained within the video stream, to any of the analogue outputs. After which, the video becomes two independent streams, where the audio groups can be selectively deleted or passed through and then re-clocked and sent to the SDI outputs.

The de-embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and ▶

## Redbox - Embedders & De-Embedders

individually buffered SDI outputs. It supports the full range of 3G, HD and SD standards from NTSC and PAL up to 1080p 60Hz.

The analogue outputs full-scale gain settings can be set via jumpers inside the unit.

Allowable settings are +12dBu, +18dBu and +24dBu reference FSD. The balanced and unbalanced output connections are paralleled, allowing one type to be used per output.

| Audio Specification For RB-VHDMA8 | |
|---|---|
| **Front Panel Controls & Indicators** | |
| De-embed Bank Select: | Bank 1 or 2 |
| Bank Channel Select: | Channels 1,2,3 or 4 |
| Group Select: | Groups 1,2,3 or 4 |
| Group Channel Select: | Group channels 1,2,3 or 4 |
| Status: | 1 x SDI input status LED<br>2 x SDI output LEDs<br>4 x Audio group status LEDs |
| **Audio Specifications** | |
| Max Output Level: | +24dBu (balanced) |
| Output Impedance: | <50Ω (balanced) |
| Gain Range: | 12dBu, 18dBu or 24dBu ref FSD (jumper selectable) |
| Signal to Noise: | Better than -106dB (RMS A-weighted at 24-bit, balanced) |
| Distortion and Noise: | Better than -85dB THD+N at 1kHz (balanced) |
| **Connections** | |
| Analogue Audio Outputs: | 8 output channels via BNC (unbalanced) or D-type socket (balanced) |
| Analogue Audio Connectors: | 8 x BNC<br>2 x 25-way D-type |
| Power Supply: | Universal filtered IEC, continuously rated 85-264VAC @47-63Hz, fused, max 14W |
| **Equipment Type** | |
| RB-VHDMA8 | 3G/HD/SD-SDI De-embedder, 8 channel analogue outputs |

## RB-VHCMA4 3G/HD/SD-SDI Embedder & De-Embedder 4 Channel Analogue I/O

NEW!

| Audio Specification For RB-VHCMA4 | |
|---|---|
| **Front Panel Controls & Indicators** | |
| Bank Select: | De-embed bank or embed bank |
| Bank Channel Select: | Channels 1,2,3 or 4 |
| Group Select: | Groups 1,2,3 or 4 |
| Group Channel Select: | Group channels 1,2,3 or 4 |
| Status: | 1 x SDI input status LED<br>2 x SDI output LEDs<br>4 x Audio group status LEDs |
| **Audio Specifications** | |
| **Analogue Inputs** | |
| Maximum Input Level: | +27dBu (balanced) |
| Input Impedance: | >10kΩ bridging (balanced) |
| Input Levels: | +12dBu, +18dBu or +24dBu for FSD (jumper selectable) |
| Signal to Noise: | Better than -113dBFS (RMS A-weighted at 24-bit, balanced) |
| Distortion and Impedance: | Better than -100dB THD+N at 1kHz (balanced) |
| **Analogue Outputs** | |
| Max Output Level: | +24dBu (balanced) |
| Output Impedance: | <50Ω (balanced) |
| Gain Range: | 12dBu, 18dBu or 24dBu ref FSD (jumper selectable) |
| Signal to Noise: | Better than -106dB (RMS A-weighted at 24-bit, balanced) |
| Distortion and Noise: | Better than -85dB THD+N at 1kHz (balanced) |
| **Connections** | |
| Analogue Audio Inputs: | 4 input channels via BNC (unbalanced) or D-type (balanced) |
| Analogue Audio Outputs: | 4 output channels via BNC (unbalanced or D-type (balanced) |
| Analogue Audio Connectors: | 8 x BNC<br>2 x 25-way D-type socket |
| Power Supply: | Universal filtered IEC, continuously rated 85-264VAC @47-63Hz, fused, max 16W |
| **Equipment Type** | |
| RB-VHCMA4 | 3G/HD/SD-SDI embedder & de-embedder, 4 channel analogue I/O |

The RB-VHCMA4 is a 4-channel analogue de-embedder and a 4-channel analogue embedder combined into a single 19-inch rack unit.

The unit selectively de-embeds up to 4 channels within any audio group contained within the video stream to any of the analogue outputs. After which, the video becomes two independent streams, where the audio groups can be selectively deleted or passed through. The unit then embeds any of the 4 analogue input channels to available groups within each of the two video streams, which are then re-clocked and sent to the SDI outputs.

The de-embedding and embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and individually buffered SDI outputs. It supports the full range of 3G, SD and HD standards from NTSC and PAL up to 1080p 60Hz.

The analogue outputs full-scale gain settings can be set via jumpers situated inside the unit. Allowable settings are +12dBu, +18dBu and +24dBu reference FSD

Similarly, the analogue inputs full-scale gain settings can be set via jumpers inside the unit. Allowable settings are +12dBu, +18dBu and +24dBu for FSD.

The balanced and unbalanced connections are paralleled, allowing one type to be used per input or output.

## Redbox - Embedders & De-Embedders

### RB-VHCMD16 3G/HD/SD-SDI Embedder & De-Embedder 16 Channel Digital I/O

NEW!

The RB-VHCMD16 is a 16-channel de-embedder and 16 channel embedder combined into a single 19-inch rack unit.

The unit selectively de-embeds any channel within any audio group contained within the video stream to any of the digital outputs. After which, the video becomes two independent streams, where the audio groups can be selectively deleted or passed through. The unit then embeds any of the digital input channels to available groups within each of the two video streams, which are then re-clocked and sent to the SDI outputs.

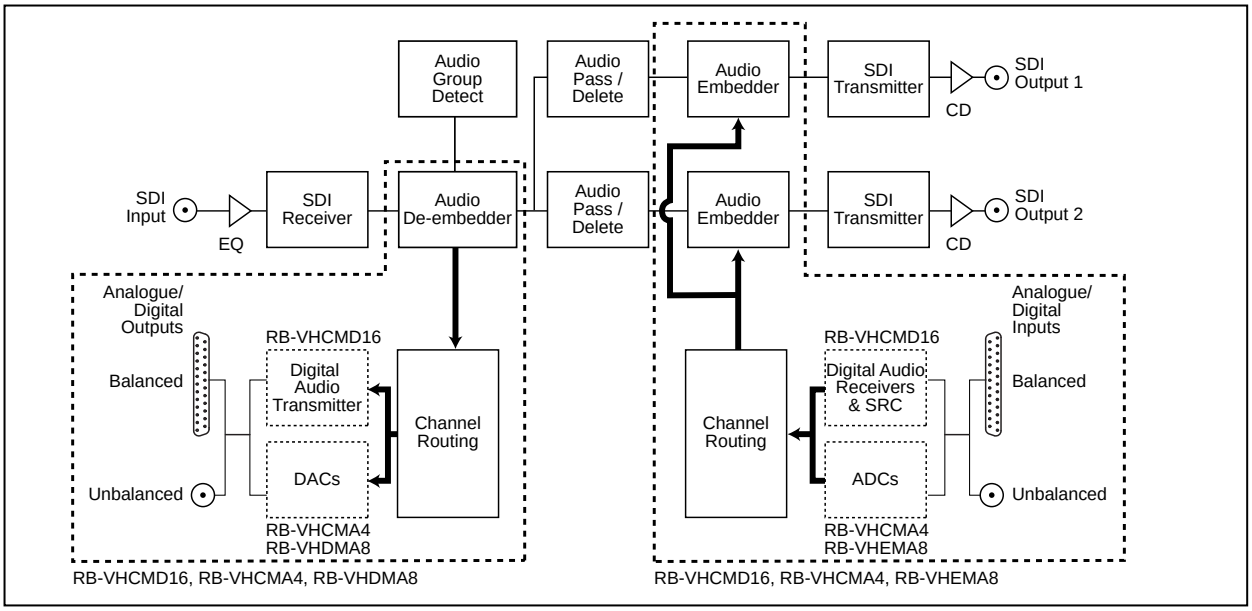
The de-embedding and embedding channel routing is controlled via the front panel buttons and indicators. There is also LED indication for SDI input status and audio group presence.

The unit can be remote controlled via ethernet or serial port connections using the Sonifex SCi software.

It has a triple rate SDI receiver with automatic input rate detection and equalisation along with two re-clocked and individually buffered SDI outputs. It supports the full range of 3G, HD and SD standards from NTSC and PAL up to 1080p 60Hz.

Each digital input is normally sample rate converted to 48kHz before embedding, so that it is synchronous to the video input. Though sample rate conversion can be bypassed on a per bank basis allowing SMPTE-337M data to be embedded. All digital outputs are output at 48kHz, synchronous to the video input. The digital inputs and outputs can be selected as AES or S/PDIF via jumpers situated inside the unit. The balanced AES/EBU and unbalanced S/PDIF I/O connections are paralleled, allowing one type to be used per input or output.

| Audio Specification For RB-VHCMD16 | |
|---|---|
| **Front Panel Controls & Indicators** | |
| Bank Select: | Bank 1, 2, 3 or 4 |
| Bank Channel Select: | Channels 1,2,3 or 4 |
| Function Select: | De-embed or embed |
| Group Select: | Groups 1,2,3 or 4 |
| Group Channel Select: | Group channels 1,2,3 or 4 |
| Status: | 1 x SDI input status LED<br>2 x SDI output LEDs<br>4 x Audio group status LEDs |
| **Audio Specifications** | |
| Output Sample Rate: | 48kHz |
| Input Sample Rates: | 32-192kHz, sample rate converted to 48kHz |
| Input & Output Impedance: | 110Ω or 75Ω (jumper selectable) |
| Signal Level (un-terminated): | Balanced: 3Vp-p +/- 20%<br>Unbalanced: 1Vp-p +/- 20% |
| Dynamic Range: | 138dB |
| Distortion and Noise: | <-137dB THD+N at 997Hz, ref 0dBFS |
| **Connections** | |
| Digital Audio Outputs: | 16 outputs via 8 BNCs (S/PDIF) or D-type (AES/EBU) |
| Digital Audio Inputs: | 16 inputs via 8 BNCs (S/PDIF) or D-type (AES/EBU) |
| Digital Audio Connectors: | 16 x BNC<br>2 x 25-way D-type socket |
| Power Supply: | Universal filtered IEC, continuously rated 85-264VAC @47-63Hz, fused, max 13W |
| **Equipment Type** | |
| RB-VHCMD16 | 3G/HD/SD-SDI embedder & de-embedder 16 channel digital I/O |




*Redbox Embedders & De-Embedders System Block Diagram*

## Confidence Monitors

**The latest additions to the Reference Monitor range of 1U rack-mount audio monitors are two new confidence monitors. Using the same outstanding speaker system as the Reference Monitor range, the confidence monitors offer a superb sound with a cut-down feature set.**

**The confidence monitors have been designed to give the best possible performance at a reduced price:**

### RM-CA2 Confidence Monitor, 2 LED Meters & 2 Analogue Stereo Inputs

The RM-CA2 is a 1U rack-mount unit offering quality loudspeaker monitoring and 2 channel metering of two stereo analogue audio sources. Input 1 has stereo balanced Neutrik™ XLRs and Input 2 has both stereo balanced Neutrik™ XLRs and stereo unbalanced RCA phono connectors. The balanced analogue inputs can be wired unbalanced if required.

Sources are selected via a front panel push-button switch, with clear LED indication of the current source.

A rear panel DIPswitch setting allows the unit to monitor either:

- Stereo signals, with the two front panel control knobs acting as stereo volume and balance control, to alter the stereo imaging of the left and right channels, or
- Dual mono signals, with the two front panel control knobs acting as left and right volume controls.

There is a front panel headphone socket which responds to the volume controls and the headphone socket automatically mutes the internal loudspeakers when a plug is inserted.

A pair of line-level analogue audio outputs follow the selected source at the selected level, or optionally at 10dB lower (if using the unbalanced input), set via rear-panel DIPswitch.

The level of the chosen source is shown on an 8 segment LED bar-graph display with PPM and VU scales indicated. The bar-graph can optionally be lowered by 10dB (if using the unbalanced input), set via rear-panel DIPswitch.

A single phase meter LED indicates channel correlation or phase error conditions.

The three-way loudspeaker system is fed via a DSP-based active crossover and a trio of highly efficient Class-D amplifiers. Careful attention to driver selection, materials and case design, plus active DSP equalisation, has ensured a flat response and outstanding reproduction from such a shallow unit. A protective limiter prevents damage to the loudspeakers under overload conditions

The RM-CA2 operates from global mains voltages (85-264V AC, 47-63Hz) without adjustment and can optionally be ordered with a DC 9V to 36V input instead of the AC input.

- Anti-vibration steel case.
- Sealed lid with foam cut-outs to dampen lid.
- Multi-point screw fixings ensure lid rigidity.
- Rear connector ports sealed with foam.
- Glue used on components which could move, or vibrate.
- Accurate 3-way speaker system.
- Two mid/high frequency speakers provide excellent stereo imaging.
- Separately driven, forward facing, dual magnet, mono bass driver.
- Custom-moulded, profiled, HF enclosures minimise standing waves.
- Acoustic damping in the HF enclosures reduces colouration.
- Separate, sealed, infinite-baffle enclosure for each driver.
- Magnetically shielded drivers so that the monitors are perfectly safe to use near CRTs and TFT displays.
- Separate, highly efficient class-D switching amplifier for each speaker.
- Short, even cable lengths to and from the speaker enclosures to reduce any potential microphonic induction.
- DSP based design allows better audio performance to be realised.
- Active crossover provides perfect separation between mid-range and bass sounds.
- A universal power supply ensures global voltage operation without adjustment.
- Optional DC power input.

## Confidence Monitors

### RM-CAD8 Confidence Monitor, 2 LED Meters, 2 Analogue & 6 Digital Stereo Inputs

*"The source select button illuminates to indicate synchronisation lock to the incoming digital source."*

The RM-CAD8 has all the features of the RM-CA2 together with the ability to select from an additional 6 stereo digital inputs. As well as the 2 stereo analogue inputs there are also:

- 4 x stereo AES/EBU balanced inputs on XLR 3 pin female.
- 1 x stereo S/PDIF unbalanced input on RCA phono female.
- 1 x stereo TOSlink unbalanced input on an optical connector.

The source select button illuminates to indicate synchronisation lock to the incoming digital source.

Sample rate converters on the digital inputs allow sources of different sample rates to be connected and monitored, between 32kHz and 96kHz.

All other features of the unit are identical to the RM-CA2.

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**Technical Specification For RM-CA2 & RM-CAD8**

| Inputs | |
|---|---|
| Audio Inputs (RM-CA2): | 2 x stereo analogue (1 x XLR balanced, 1 x XLR balanced or RCA phono unbal) |
| Audio Inputs (RM-CAD8): | 2 x stereo analogue (1 x XLR balanced, 1 x XLR balanced or RCA phono unbal)<br>4 x stereo XLR balanced AES/EBU digital<br>1 x stereo RCA phono S/PDIF digital<br>1 x stereo optical TOSLink digital |
| Max Level (0dB Input Gain): | +18dBu (analogue)/0dBFS (digital) |
| CMRR: | >60dB typical |
| Analogue Input Impedances: | XLR: >20kΩ balanced bridging<br>RCA: >10kΩ unbalanced |
| Digital Input Impedances: | (RM-CAD8 only):<br>110Ω ±20% AES/EBU balanced I/O<br>75Ω ±5% S/PDIF unbalanced I/O<br>75Ω ±5% TOSlink unbalanced I/O |
| AES/EBU Sample Rate: | 32 to 96kHz, converted internally to 48kHz |
| Input Gain: | +10dB on unbalanced input |
| Selection: | Front panel push button with indicator LEDs |

| Line Level Outputs | |
|---|---|
| Audio Outputs: | 1 x stereo analogue |
| Gain re Selected Input: | Unity or -10dB (switchable) |
| Maximum Output Level: | +18dB |
| Output Impedance: | <50 ohms |
| Distortion: | <0.02% (1kHz, +8dBu output) |
| Noise: | -95dB RMS, unity gain ref +8dBu output |
| Frequency Response: | 20Hz-20kHz +0/-0.5dB |
| Crosstalk<br>1kHz input:<br>10kHz input: | Analogue I/O, ref 0dBu<br><-90dB<br><-85dB |

| Amplifier/Loudspeakers | |
|---|---|
| Configuration: | Three-way with stereo mid/high-frequency drivers & mono low-frequency driver |
| Power Output: | 2 x 7W (HF) + 15W (LF) with protective limiter |
| Crossover: | 250Hz (24dB/octave, Linkwitz-Riley) |
| Distortion (HF Outputs): | < 0.1% (1kHz, 3W output) |
| Distortion (LF Output): | < 0.1% (100Hz, 6W output) |
| Noise: | More than 102dB below full output |
| Volume: | Mute to full volume via front panel rotary control |
| Balance Trim: | ±6dB via front panel rotary control. |
| Peak Acoustic Level: | 98dB SPL @ 2ft |

| Level & Phase Metering | |
|---|---|
| Number: | 2 x 8-segment LED bargraphs |
| Line-Up Level: | 0dB on scale can be set to 0dB or -10dB via rear panel DIPswitch |
| Phase Meter: | Single LED indication showing average |

| Connectors | |
|---|---|
| Audio Inputs (RM-CA2): | 4 x XLR 3-pin female balanced<br>2 x RCA female phono unbalanced |
| Audio Inputs (RM-CAD8): | 4 x XLR 3-pin female analogue<br>2 x RCA phono analogue<br>4 x XLR 3-pin female AES/EBU digital<br>1 x RCA phono female S/PDIF digital<br>1 x optical TOSLink digital |
| Audio Outputs: | 2 x XLR 3-pin male (balanced, may be unbalanced) |
| Headphones: | 1/4" (6.35mm) A-gauge 3-pole stereo jack socket |
| Mains Input: | Filtered 3-pin IEC male, continuously rated 85 - 264VAC, 47 - 63Hz, fused, 60W peak, 30W average |
| Fuse Rating: | Anti-surge fuse 2A 20 x 5mm |

| Equipment Type | |
|---|---|
| RM-CA2: | Confidence Monitor, 2 LED meters, 2 analogue stereo inputs |
| RM-CA2-DC: | Confidence Monitor, 2 LED meters, 2 analogue stereo inputs, DC supply |
| RM-CAD8: | Confidence Monitor, 2 LED meters, 2 analogue & 6 digital stereo inputs |
| RM-CAD8-DC: | Confidence Monitor, 2 LED meters, 2 analogue & 6 digital stereo inputs, DC supply |

| Physical Specification | |
|---|---|
| Dimensions (Raw): | 48cm (W) x 27cm (D) x 4.4cm (H) (1U)<br>19" (W) x 12" (D) x 1.73" (H) (1U) |
| Dimensions (Boxed): | 55cm (W) x 43cm (D) x18cm (H)<br>21.7" (W) x 16.9" (D) x 7.1" (H) |
| Weight: | Nett: 4.4kg Gross: 5.8kg<br>Nett: 10lb Gross: 13lb |

## Reference Monitors

### RM-E1X Reference Monitor Dolby E Decoder XLR AES Expansion Card & RM-E1B Reference Monitor Dolby E Decoder BNC Expansion Card

These expansion boards for the Reference Monitor RM-4C8 allow the monitoring of a digital audio stream containing either Linear PCM or Dolby* encoded audio.

The RM-E1X has 2 x XLR inputs to accept AES/EBU level inputs and the RM-E1B has 2 x BNC connectors for S/PDIF level inputs.

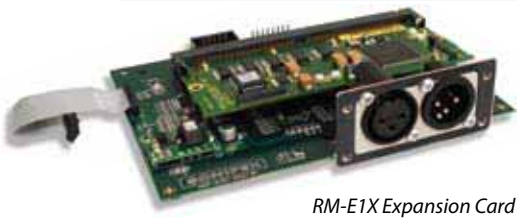
Dolby data is decoded and passed to the Reference Monitor as either a stereo down mix or the full complement of individual channels. If the signal is standard Linear PCM, then this audio data is simply passed straight through.

The input is re-transmitted with minimal delay, to allow connection to other equipment.

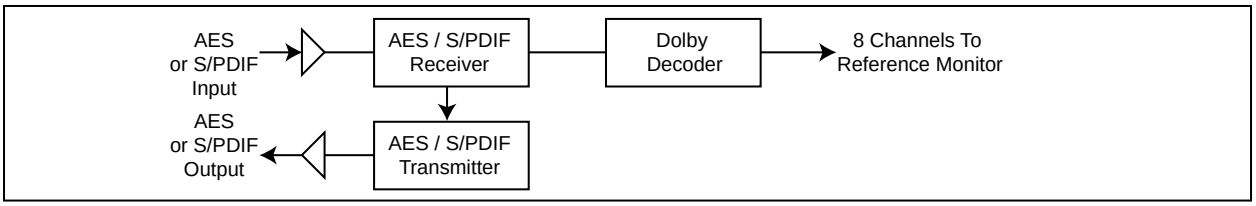
| Technical Specification For RM-E1X and RM-E1B | |
|---|---|
| AES Input/Output (RM-E1X): | 110Ω transformer coupled balanced I/O |
| S/PDIF Input/ Output (RM-E1B): | 75Ω transformer coupled unbalanced I/O |
| Sample Rates: | 32 - 48 kHz |
| Audio Formats: | Linear PCM<br>Dolby E (16, 20 and 24 bit)<br>Dolby Digital (16 and 32 bit) |

| Connectors | |
|---|---|
| AES Input:<br>AES Output: | 1 x XLR 3 pin socket (RM-E1X)<br>1 x XLR 3 pin plug (RM-E1X) |
| S/PDIF Input:<br>S/PDIF Output: | 1 x BNC (RM-E1B)<br>1 x BNC (RM-E1B) |

*RM-E1B Expansion Card*



*RM-E1X Expansion Card*




** Dolby and the double-D symbol are registered trademarks of Dolby Laboratories*

### RM-4C8-HDE1 Reference Monitor, 4 LED Meters, 8 Channel Inputs & Dual Source Selectors With De-Embedder & Dolby Decoder Card

This version of the Reference Monitor is the RM-4C8 with the RM-HDE1 expansion card already fitted. So, it has all of the features of the RM-4C8 as standard together with the ability to de-embed audio from an HD-SDI stream and then decode a Dolby digital audio signal from that de-embedded audio.

The RM-HDE1 adds to the unit a 75ohm HD-SDI input and output on BNC connectors with the output acting as a loop-through of the input. The monitor can take an HD-SDI input and de-embed audio from any selected audio group, with left and right speakers being able to monitor any 2 channels within that group. The 4 channels in a group are shown on the 4 bar-graph meters. If a Dolby E or Dolby Digital input is detected on the selected input, the Channels (CHANS) button flashes to indicate that decoding is possible. Pressing the CHANS button displays the Dolby Digital 5.1 or Dolby E 8 channel signal, using the 4 bar-graph meters.

Each meter is split into 2 sections allowing you to view L, R, C, LFE, Ls, Rs for Dolby Digital and an additional Lt, Rt for Dolby E.

The Programmes (PROGS) button allows any Dolby programmes to be selected and monitored.

Full Dolby Metadata is available using the SCi remote control software. For a more detailed description of Dolby Decoding operation please refer to the Reference Monitor handbook.

With full remote control via GPI, RS232 or USB, a 5 band parametric equaliser, 6 front panel modifier buttons and the ability to take the optional HD-SDI expansion cards, the RM-4C8 is a flexible and versatile monitoring solution.

## Reference Monitor Meters

NEW!

**The new Reference Monitor Meters are a range of freestanding and 1U rack-mount precision meters offering accurate, high resolution metering of between 1 and 4 stereo audio sources.**

**Each stereo source is auto-switching between either analogue or digital AES/EBU format with sample rates up to 192kHz accepted.**

The level of each stereo source is displayed on a pair of bright, multi-coloured bargraph meters, with a large choice of accurately modelled scales/responses to suit different applications and local preferences. Separate 5 LED phase meters indicate channel correlation or phase error conditions, and additional LEDs show digital input lock and audio level alarm status.

On the rear panel, open-collector alarm outputs provide hardware indication of audio under-level or silence, audio over-level, sustained phase errors above 90 degrees and digital source lock.

Status monitoring and unit ID functions, plus firmware updates to add extra functionality, are all accessible remotely via a RS232 connection in conjunction with Sonifex SCi software.

All Reference Monitor Meters operate from global mains voltages (85-264V AC, 47-63Hz) without adjustment.

There are eight Reference Monitor Meters:

- RM-M1F53 1 Stereo 53 Segment Meter, Free-Standing
- RM-M1R53 1 Stereo 53 Segment Meter, Rack-Mount
- RM-M2F53 2 Stereo 53 Segment Meters, Free-Standing
- RM-M2R53 2 Stereo 53 Segment Meters, Rack-Mount
- RM-M4R53 4 Stereo 53 Segment Meters, Rack-Mount
- RM-M1F106 1 Stereo 106 Segment Meter, Free-Standing
- RM-M1R106 1 Stereo 106 Segment Meter, Rack-Mount
- RM-M2R106 2 Stereo 106 Segment Meters, Rack-Mount

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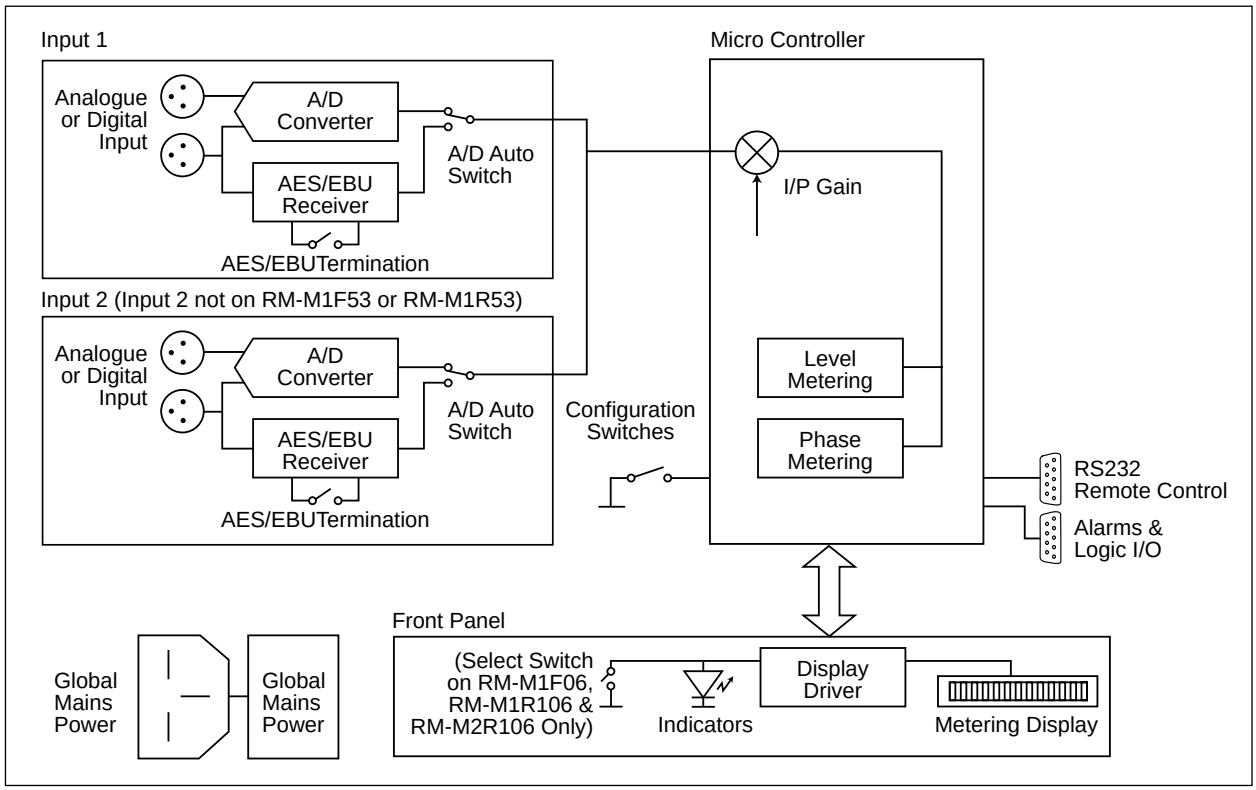


*Reference Monitor Meters Block Diagram*

## Reference Monitor Meters

### RM-M1F53 1 Stereo 53 Segment Meter, Free-Standing

The RM-M1F53 is a free-standing, single stereo channel meter with bright, multi-coloured 53-segment bargraph meters and all the features listed in the summary.

*RM-M1F53 1 Stereo 53 Segment Meter, Free-Standing*

### Available Scales/Ballistics For All Meters

**There are nine scales available with accurately modelled ballistics. Each stereo meter pair can have a different scale, set via a DIPswitch on the rear panel. A complete set of overlays are provided per stereo meter so that you can define the scale(s) that you need:**

| | |
|---|---|
| 1. Dual BBC PPM + standard VU | |
| 2. BBC PPM | IEC60268-10 11a |
| 3. EBU PPM | IEC60268-10 11b |
| 4. Nordic PPM | IEC60268-10 1 |
| 5. AES/EBU digital PPM | IEC60268-18 |
| 6. DIN PPM | DIN45406 |
| 7. Standard VU | IEC60268-17 |
| 8. Extended VU | IEC60268-17 |
| 9. German | |

### RM-M1R53 1 Stereo 53 Segment Meter, Rack-Mount

The RM-M1R53 is a 1U rack-mount version of the RM-M1F53.

*RM-M1R53 1 Stereo 53 Segment Meter, Rack-Mount*

## Reference Monitor Meters

### RM-M2F53 2 Stereo 53 Segment Meters, Free-Standing

*RM-M2F53 2 Stereo 53 Segment Meters, Free-Standing*

NEW!

The RM-M2F53 is a free-standing, twin stereo channel meter with bright, multi-coloured 53-segment bargraph meters and all the features listed in the summary.

### RM-M2R53 2 Stereo 53 Segment Meters, Rack-Mount

*RM-M2R53 2 Stereo 53 Segment Meters, Rack-Mount*

NEW!

The RM-M2R53 is a 1U rack-mount version of the RM-M2F53.

### RM-M4R53 4 Stereo 53 Segment Meters, Rack-Mount

*RM-M4R53 4 Stereo 53 Segment Meters, Rack-Mount*

NEW!

The RM-M4R53 is a 1U rack-mount which combines 2 x RM-M2R53 units, providing 4 stereo channel monitoring.

## Reference Monitor Meters

### RM-M1F106 1 Stereo 106 Segment Meter, Free-Standing

The RM-M1F106 is a single stereo channel free-standing meter but with 2 stereo inputs and a front panel source selector.

This unit has a pair of multi-coloured 106-segment bargraph meters for greater display accuracy. A front panel mounted push-button selects the input source to be monitored, from either of the 2 auto-switching analogue or digital AES/EBU stereo inputs, or from a mono mix of each channel, with channel 1 shown on the left meter and channel 2 shown on the right meter.

All other functionality is listed in the summary.

*RM-M1F106 1 Stereo 106 Segment Meter, Free-Standing*

### RM-M1R106 1 Stereo 106 Segment Meter, Rack-Mount

The RM-M1R106 is a 1U rack-mount version of the RM-M1F106.

*RM-M1R106 1 Stereo 106 Segment Meter, Rack-Mount*

## Reference Monitor Meters

### RM-M2R106 2 Stereo 106 Segment Meters, Rack-Mount

NEW!

A dual rack mount version, the RM-M2R106, combines 2 x RM-M1R106 units, giving 4 stereo channel monitoring.

*RM-M2R106 2 Stereo 106 Segment Meters, Rack-Mount*

**Technical Specification - Reference Monitor Meters**

**Inputs**

| | |
|---|---|
| Audio Inputs: | 1 x stereo analogue or AES/EBU digital (auto-selecting) (RM-M1F53 & RM-M1R53)<br>2 x stereo analogue or AES/EBU digital (auto-selecting) (RM-M2F53, RM-M2R53, RM-M1F106 & RM-M1R106)<br>4 x stereo analogue or AES/EBU digital (auto-selecting) (RM-M4R53 & RM-M2R106) |
| Max Level (0dB Input Gain): | +18dBu (analogue)/0dBFS digital |
| CMRR: | >60dB typical |
| Input Impedance: | 20kΩ (analogue)<br>110Ω (digital with termination switchable via DIPswitch) |
| AES/EBU Sample Rate: | 32 to 192kHz, converted internally to 48kHz |
| Input Gain: | 0, +6, +12 or +18dB digital gain (switchable via DIPswitch) |
| Selection: | Front panel illuminated push switch button (RM-M1F106, RM-M1R106 & RM-M2R106) |

**Level Metering**

| | |
|---|---|
| Number: | 1 x 53-segment tri-colour LED bargraphs (RM-M1F53 & RM-M1R53)<br>2 x 53-segment tri-colour LED bargraphs (RM-M2F53, RM-M2R53)<br>4 x 53-segment tri-colour LED bargraphs (RM-M4R53)<br>1 x 106-segment tri-colour LED bargraphs (RM-M1F106, RM-M1R106)<br>2 x 106-segment tri-colour LED bargraphs (RM-M2R106) |

Characteristics: Selectable by DIPswitch from:

| | | |
|---|---|---|
| 1. | Dual BBC PPM + standard VU | |
| 2. | BBC PPM | IEC60268-10 11a |
| 3. | EBU PPM | IEC60268-10 11b |
| 4. | Nordic PPM | IEC60268-10 1 |
| 5. | AES/EBU digital PPM | IEC60268-18 |
| 6. | DIN PPM | DIN45406 |
| 7. | Standard VU | IEC60268-17 |
| 8. | Extended VU | IEC60268-17 |
| 9. | German | |

| | |
|---|---|
| Ballistics: | According to selected characteristic |
| Line-Up Level: | According to selected characteristic |

**Phase Metering**

| | |
|---|---|
| Type: | 5-segment, indication at 0, 45, 90, 135 and 180 degrees, 1 per stereo meter |

**Remote Control**

| | |
|---|---|
| Serial: | RS232, 19200 baud, 3-wire connection |

Alarm Outputs: (1-4 single input units, 1-8 twin units)

| | |
|---|---|
| 1. | Audio input 1 under-level/fail (latching) |
| 2. | Audio input 1 over-level (latching) |
| 3. | Audio input 1 sustained phase error above 90 degrees (latching) |
| 4. | AES/EBU input 1 unlock (non-latching) |
| 5. | Audio input 2 under-level/fail (latching) |
| 6. | Audio input 2 over-level (latching) |
| 7. | Audio input 2 sustained phase error above 90 degrees (latching) |
| 8. | AES/EBU input 2 unlock (non-latching) |

Open-collector outputs rated at 30V, 50mA maximum
Output low/conducting in normal condition (no alarm)

Control Inputs: (1 single input units, 2 twin units)

| | |
|---|---|
| 1. | Input 1 Alarm reset |
| 2. | Input 2 Alarm reset |

Pull-to-ground to activate inputs

**Status Indicators**

| | |
|---|---|
| AES Lock: | Indicates lock achieved on digital input |
| Level Alarm: | Indicates audio over-level |

**Connectors**

| | |
|---|---|
| Audio Inputs: | (All balanced, but may be wired unbal)<br>2 x XLR 3-pin female (RM-M1F53 & RM-M1R53)<br>4 x XLR 3-pin female (RM-M2F53, RM-M2R53, RM-M1F106 & RM-M1R106)<br>8 x XLR 3-pin female (RM-M4R53 & RM-M2R106) |
| Serial: | D-sub 9-pin female |
| Remote I/O: | D-sub 15-pin female |
| Mains Input: | Filtered 3-pin IEC male, continuously rated 85 – 264VAC, 47 – 63Hz, fused 1A, 30W peak, 15W average |

**Equipment Type**

| | |
|---|---|
| RM-M1F53 | 1 stereo 53 segment meter, free-standing |
| RM-M1R53 | 1 stereo 53 segment meter, rack-mount |
| RM-M2F53 | 2 stereo 53 segment meters, free-standing |
| RM-M2R53 | 2 stereo 53 segment meters, rack-mount |
| RM-M4R53 | 4 stereo 53 segment meters, rack-mount |
| RM-M1F106 | 1 stereo 106 segment meter, free-standing |
| RM-M1R106 | 1 stereo 106 segment meter,rack-mount |
| RM-M2R106 | 2 stereo 106 segment meters, rack-mount |

**Physical Specification**

| | |
|---|---|
| Dimensions (Raw): | RM-M1F53, RM-M2F53 & RM-M1F106<br>21.8cm (W) x 14.8cm (D) x 4.4cm (H)<br>8.6" (W) x 5.8" (D) x 1.73" (H) |
| (Boxed): | 34.5cm (W) x 27cm (D) x 7cm (H)<br>13.6" (W) x 10.6" (D) x 2.75" (H) |
| Dimensions (Raw): | RM-M1R53, RM-M2R53, RM-M4R53 & RM-M1R106 & RM-M2R106<br>48cm (W) x 14.8cm (D) x 4.4cm (H)<br>19" (W) x 5.8" (D) x 1.73" (H) |
| (Boxed): | 59cm (W) x 27cm (D) x 7cm (H)<br>21" (W) x 10.6" (D) x 2.75" (H) |
| Weight: | RM-M1F53 & RM-M1R53<br>Nett: 1.3kg Gross: 2.0kg<br>Nett: 2.9lb Gross: 4.4lb |
| Weight: | RM-M2F53 & RM-M1F106<br>Nett: 1.4kg Gross: 2.1kg<br>Nett: 3.1lb Gross: 4.6lb |
| Weight: | RM-M2R53 & RM-M1R106<br>Nett: 1.45kg Gross: 2.15kg<br>Nett: 3.2lb Gross: 4.7lb |
| Weight: | RM-M4R53 & RM-M2R106<br>Nett: 2.8kg Gross: 3.5kg<br>Nett: 6.2lb Gross: 7.7lb |

## Reference Monitor Controllers

NEW!

**The new Reference Monitor Controllers are a range of 1U rack-mount audio production control units, for providing source selection, volume, DIM and CUT controls for external analogue monitors, together with light controls for the Sonifex SignalLED range of studio signs, or similar.**

Each of the products has a light control section. This section has 3 buttons: Transmit (TX), STANDBY and Rehearse (REH). The TX and REH buttons control opto-isolated outputs on the rear panel remote connector, and these provide a direct control interface to the Sonifex SignalLED illuminated studio sign, allowing twin signs to be controlled individually.

The Standby button initiates a 2 minute countdown where the TX and REH buttons and their associated remote outputs flash alternately. After the 2 minutes has elapsed, the TX output remains on.

The remote port also has open-collector tally outputs for Transmit (TX), Rehearse (REH), as well as remote input control for the audio controls DIM and CUT, and the light controls TX, Standby and REH. There is also a +12 Volt source at 200mA maximum.

The TX, STANDBY and REH buttons can optionally be replaced if you want to use different buttons for other applications.

There are four Monitor Controller products:

- RM-MC1L Monitor Controller, Single Stereo Input & Output With Light Control
- RM-MC4L Monitor Controller, 4 Stereo Inputs, 1 Output With Light Control
- RM-MC51L Monitor Controller, 5.1 Stereo Inputs & Outputs With Light Control
- RM-MCL Monitor Light Controller, 3 Button, TX-STANDBY-REH

### RM-MC1L Monitor Controller, Single Stereo Input & Output With Light Control

NEW!

The RM-MC1L is a stereo unit with a single stereo balanced analogue input and output on XLRs. Useful in a production environment, the unit allows you to control the audio level to external monitors and to DIM the audio, or CUT it completely with simple front panel controls, or remote external inputs.

It has a master volume control that adjusts the attenuation on the output channels from 0dB down to -86dB. A CUT control mutes the audio outputs when enabled, whilst a DIM control attenuates the audio output channels by a pre-set amount from -2dB to -23dB.

All of the buttons on the front panel are illuminated by LEDs and the brightness can be changed to better suit the environment in which the unit is used.

*RM-MC1L Monitor Controller, Single Stereo Input & Output*

### RM-MC4L Monitor Controller, 4 Stereo Inputs, 1 Stereo Output With Light Control

NEW!

The RM-MC4L has four stereo balanced analogue inputs with a single stereo balanced output, all using XLR connectors. Four illuminated front panel buttons allow you to simply select the source required at the output.

The RM-MC4L has the same master volume control, CUT, DIM and light control functions and adjustments as the RM-MC1L unit.

*RM-MC4L Monitor Controller, 4 Stereo Inputs, 1 Stereo Output*

# Reference Monitor Controllers

## RM-MC51L Monitor Controller, 5.1 Stereo Inputs & Outputs With Light Control

*RM-MC51L Monitor Controller 5.1 Stereo Inputs & Outputs*

The RM-MC51L is a controller for surround sound applications with 6 balanced analogue inputs and 6 balanced analogue outputs all on XLR connectors. It is used in situations where you need to adjust the volume, or CUT, or DIM all of the speakers in a 5.1 surround system. Alternatively, the unit can be used as a global volume control for 6 analogue outputs.

The RM-MC51L has the same master volume control, CUT, DIM and light control functions and adjustments as the RM-MC1L unit.

## RM-MCL Monitor Light Controller, 3 Button, TX-STANDBY-REH

*RM-MCL Monitor Light Controller, 3 Button, TX-STANDBY-REH*

The RM-MCL is a simple light controller for controlling a TX - STANDBY - REH light system in a production studio, as detailed in the introduction. It has no audio inputs or outputs.

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### Specification For RM-MC1L, RM-MC4L, RM-MC51L & RM-MCL Reference Monitor Controllers

| Audio Specification | |
|---|---|
| Input Impedance: | >20kΩ |
| Maximum Input Level: | +25dBu |
| Output Impedance: | <50 Ω |
| Maximum Output Level: | +25dBu |
| Attenuation Range: | >86dB |
| DIM Attenuation Range: | Adjustable -3dB to -23dB via rear panel potentiometer |
| Common Mode Rejection: | >66dB typical |
| Distortion: | <0.04% ref +8dBu |
| Crosstalk: | <-80dB @ 1kHz input, ref 0dBu |

| Front Panel Operation Controls | |
|---|---|
| Light Control (All units): | Transmit (TX), Standby & Rehearse (REH) illuminated buttons |
| Channel Select (RM-MC4L): | 1, 2, 3 & 4 illuminated buttons |
| Audio Controls: | DIM & CUT illuminated buttons (not on RM-MCL) |
| Volume Control: | Rotary potentiometer for output attenuation on front panel (not on RM-MCL) |

| Rear Panel Connections | |
|---|---|
| Audio Inputs (RM-MC1L): | 2 x XLR 3-pin female (balanced) |
| Audio Inputs (RM-MC4L): | 8 x XLR 3-pin female (balanced) |
| Audio Inputs (RM-MC51L): | 6 x XLR 3-pin female (balanced) |
| Audio Outputs (RM-MC1L & RM-MC4L): | 2 x XLR 3-pin male (balanced) |
| Audio Outputs (RM-MC51L): | 6 x XLR 3-pin male (balanced) |
| Remote I/O Port: | 15 way D-type socket |
| Mains Input: | Filtered 3-pin IEC male, continuously rated 85-264VAC, 47-63Hz, fused |

| Power Consumption: | |
|---|---|
| RM-MC1L | Peak 10W, average 4W |
| RM-MC4L | Peak 10W, average 6W |
| RM-MC51L | Peak 10W, average 7W |
| RM-MCL | Peak 10W, average 2W |
| Fuse Rating: | Anti-surge fuse 1A, 20 x 5mm |

| Equipment Type | |
|---|---|
| RM-MC1L: | Monitor controller, single stereo input & output with light control |
| RM-MC4L: | Monitor controller, 4 stereo inputs, 1 stereo output with light control |
| RM-MC51L: | Monitor controller, 5.1 stereo inputs & outputs with light control |
| RM-MCL: | Monitor light controller, 3 button, TX-STANDBY-REH |

| Physical Specification | | |
|---|---|---|
| Dimensions (Raw): | 48cm (W) x 10.8cm (D) x 4.3cm (H)<br>19" (W) x 4.3" (D) x 1.7" (H) (1U) | |
| Dimensions (Boxed): | 58.5cm (W) x 22.5cm (D) x 7cm (H)<br>23" (W) x 8.9" (D) x 2.8" (H) | |
| Weight : | Nett: 1.3kg<br>Nett: 2.9lbs | Gross: 1.9kg<br>Gross: 4.2lbs |

## Studio Illuminated Signs

### SignalLED Range of RGB LED Signs For Studios

**The SignalLED range of illuminated RGB LED signs are a new range of signs designed for outside recording, on-air & production studios, meeting rooms, conference rooms and for fixed installations. The sign itself contains the control electronics, and RGB LEDs are used, so the signs can be simply configured onsite for your particular requirements.**

#### RGB LEDs - Any Colours Possible

The illuminating LEDs in the unit are RGB meaning that the colour of the sign can be selected on installation.

You can configure the sign from one of 8 colours: white, green, red, blue, yellow, orange, cyan and magenta.

The images on the following pages show the default colour of each sign.

*End Mounting 40cm Single Sign*
*(Created From LD-F1ONA Single Flush Mounting Sign & LD-KE1 kit)*

*LD-40F2TX-REH Flush Mounting 40cm Twin Sign*

*8 different colours of the SignalLED Sign*

#### Different Display Modes

Four modes of illumination are available:

- Constant illumination.
- Flashing, regularly on/off.
- Pulsing - flashing, then off, repeated
- Off

#### Single or Twin Signs

Each sign is 40cm or 20cm long. The 40cm signs can be split into two 20cm sides which can be separately, or jointly controlled, e.g. you can have a 40cm 'ON AIR' sign, or twin 2 x 20cm signs, such as 'ON AIR' and 'MIC LIVE'.

#### Dual Control Inputs

The sign can be controlled by either, or both, of 2 pull-low inputs, e.g. a single input can be used to control a single 'MIC LIVE' sign, or 2 inputs can be used to control a twin 'TX' and 'REH' sign with independent control of each side of the sign.

*LD-40F1ONA Single Flush Mounting 40cm 'ON AIR' Sign*

*LD-40F2ONA-MCL Twin 'ON AIR' & 'MIC LIVE' sign*

## Studio Illuminated Signs

### Flush or End Mounting

The sign is supplied as standard so that it can be mounted flush to a wall, e.g. for the 'TX' & 'REH' sign shown below. However, a mounting kit is available, LD-KE1, to mount the sign perpendicular to a wall, e.g. above a door, such as the ON AIR sign shown.

*End Mounting 40cm Single Sign (Created From Single Flush Mounting LD-40F1ONA Sign & LD-KE1 kit)*

*LD-KE1 End Mounting Kit For 40cm Or 20cm Flush Mounting Signs*

*LD-40F2TX-REH Flush Mounting 40cm Twin Sign*

*LD-40F2ONA-SIL Twin 'ON AIR' & 'SILENCE' sign*

### LD-KC1 Ceiling Mounting Kit

The LD-KC1 mounting kit can be used to attach a 40cm or 20cm flush mounting sign to the ceiling or a desktop.

### Single 20cm Flush Mounting Sign

These are the available choices for the smaller 20cm flush-mounting signs. Custom signs can be made to order, if required.

*LD-20F1REC Single Flush Mounting 20cm 'RECORD' Sign*

*LD-20F1ONA Single Flush Mounting 20cm 'ON AIR' Sign*

*LD-20F1MCL Single Flush Mounting 20cm 'MIC LIVE' Sign*

### Simple Installation

The signs are supplied with a 6V wall-wart power supply with international adapters for the UK, Europe, USA and Australasia & a 5m lead. Simply wire up your control signal(s) and DC input to the 'screw terminal block' inside the sign, route the cables through the integral cable clamp and mount the unit on the wall.

An installation tool, the LD-IT can be used to hold the sign in place on the wall mount whilst you wire it up.

The display mode and colour options are set-up using an 8 way DIPswitch, accessible during installation.

*LD-IT LED Sign End Mounting Installation Tool*

### Double Sided End Mounting Sign

An end mounting sign can be supplied which has the sign readable from both sides, e.g. for putting in a long corridor.

*D-40E1REC Double Sided End Mounting 40cm 'RECORD' Sign*

*LD-40E1ONA Double Sided End Mounting 40cm 'ON AIR' Sign*

*LD-40E1MCL Double Sided End Mounting 40cm 'MIC LIVE' Sign*

### Twin Double Sided End Mounting Sign

This is a twin version of the double sided end mounting sign.

*LD-40E2 'TX' & 'REH' Twin Double Sided End Mounting 40cm 'MIC LIVE' Sign*

# Studio Illuminated Signs

## Custom Signs

Although a range of standard signs is supported, custom signs, for example with your company name or logo, can be produced for a nominal setup fee. Contact Sonifex with your requirements.

## How to Order

Just select the name of the sign from the list below.

*LD-40F1PHN Single Flush Mounting 40cm 'PHONE' Sign*

*LD-40F1REC Single Flush Mounting 40cm 'RECORD' Sign*

*LD-40F1DOR Single Flush Mounting 40cm 'DOOR' Sign*

*LD-40F1INT Single Flush Mounting 40cm 'INTERVIEW IN PROGRESS' Sign*

*LD-40F1ONA Single Flush Mounting 40cm 'ON AIR' Sign*

*LD-40F1OBT Single Flush Mounting 40cm 'OBIT' Sign*

*LD-40F1MCL Single Flush Mounting 40cm 'MIC LIVE' Sign*

*LD-40F1NOE Single Flush Mounting 40cm 'NO ENTRY' Sign*

*LD-40F1ADB Single Flush Mounting 40cm 'AD BREAK' Sign*

*LD-40F1EXIT Single Flush Mounting 40cm 'EXIT' Sign*

*LD-40F1REH Single Flush Mounting 40cm 'REHEARSAL' Sign*

*LD-40F1MET Single Flush Mounting 40cm 'MEETING IN PROGRESS' Sign*

*LD-40F1TRF Single Flush Mounting 40cm 'TRAFFIC FLAG ON' Sign*

*LD-40F1SIL Single Flush Mounting 40cm 'SILENCE PLEASE' Sign*

| Technical Specification For SignalLED Range | |
|---|---|
| **Physical Specification** | |
| Power Input:<br>40cm Sign: | 5-7V DC<br>500mA max |
| Input Connector: | 4 way screw terminal block |
| Control Inputs: | 2 x pull-down to 0V |
| Dimensions (Perspex): | Small Single: 20cm (W) x 8cm (H)<br>Large Single: 40cm (W) x 8cm (H) |
| Dimensions (Boxed 20cm): | 39cm (W) x 20cm (D) x 11cm (H)<br>15.4" (W) x 7.9" (D) x 4.3" (H) |
| Dimensions (Boxed 40cm): | 60cm (W) x 20cm (D) x 11cm (H)<br>23.6" (W) x 7.9" (D) x 4.3" (H) |
| Weight (20cm): | Nett: 0.35kg Gross: 0.85kg<br>Nett: 0.8lb Gross: 1.9lb |
| Weight (40cm): | Nett: 0.55kg Gross: 1.15kg<br>Nett: 1.2lb Gross: 2.6lb |

| Equipment Type | |
|---|---|
| **Single Flush Mounting Signs (40cm):** | |
| LD-40F1REC | 40cm 'RECORD' Sign |
| LD-40F1ONA | 40cm 'ON AIR' Sign |
| LD-40F1MCL | 40cm 'MIC LIVE' Sign |
| LD-40F1PHN | 40cm 'PHONE' Sign |
| LD-40F1TRF | 40cm 'TRAFFIC FLAG ON' Sign |
| LD-40F1ADB | 40cm 'AD BREAK' Sign |
| LD-40F1REH | 40cm 'REHEARSAL' Sign |
| LD-40F1DOR | 40cm 'DOOR' Sign |
| LD-40F1OBT | 40cm 'OBIT' Sign |
| LD-40F1NOE | 40cm 'NO ENTRY' Sign |
| LD-40F1EXIT | 40cm 'EXIT' Sign |
| LD-40F1SIL | 40cm 'SILENCE PLEASE' Sign |
| LD-40F1MET | 40cm 'MEETING IN PROGRESS' Sign |
| LD-40F1INT | 40cm 'INTERVIEW IN PROGRESS' Sign |
| **Twin Flush Mounting Signs (2 x 20cm):** | |
| LD-40F2TX-REH | 2 x 20cm 'TX' & ' REH' Sign |
| LD-40F2ONA-MCL | 2 x 20cm 'ON AIR' & 'MIC LIVE' Sign |
| **Single Flush Mounting Signs (20cm):** | |
| LD-20F1REC | 20cm 'RECORD' Sign |
| LD-20F1ONA | 20cm 'ON AIR' Sign |
| LD-20F1MCL | 20cm 'MIC LIVE' Sign |
| **Double Sided End Mounting Signs (40cm):** | |
| LD-40E1REC | 40cm 'RECORD' Sign |
| LD-40E1ONA | 40cm 'ON AIR' Sign |
| LD-40E1MCL | 40cm 'MIC LIVE' Sign |
| **Twin Double Sided End Mounting Signs (40cm):** | |
| LD-40E2TX-REH | 2 x 20cm 'TX' & ' REH' Sign |
| **Mounting Kits:** | |
| LD-KE1 | End Mounting Kit For 40cm Or 20cm Flush Mounting Signs |
| LD-KC1 | Ceiling Mounting Kit For 40cm Or 20cm Flush Mounting Signs |
| LD-IT | LED Sign End Mounting Installation Tool |

## openGear Cards

openGear is an open-architecture rack system developed by Ross Video, a leader in video technologies, to provide a standard rack-based platform on which companies can develop card-based audio & video products. The adoption of openGear based cards by Sonifex allows customers to choose Sonifex cards as part of an overall terminal equipment solution.

The openGear frames offer the flexibility of independent rear modules for connectivity to a wide array of interfaces and control via TCP/IP connectivity using a free application called Dashboard.

For more general information, visit the following websites:

http://www.opengear.tv/

http://www.rossvideo.com/rossgear/opengear/

*OG-DDA8 8 Output Digital Audio Distribution Amplifier*

24 BIT 192 kS/s

There are four products in the Sonifex openGear range:

- OG-DDA8B openGear 8 Output Balanced Digital Audio Distribution Amplifier, 2 Inputs
- OG-DDA8U openGear 8 Output Unbalanced Digital Audio Distribution Amplifier, 2 Inputs
- OG-DDA8BS openGear 8 Output Balanced Digital Audio Distribution Amplifier, 2 Inputs & Sample Rate Conversion
- OG-DDA8US openGear 8 Output Unbalanced Digital Audio Distribution Amplifier, 2 Inputs & Sample Rate Conversion

### Sonifex OG-Frame2U

The OG-Frame2U is a 2RU high density modular frame, designed to accommodate up to 20 openGear cards.

*Sonifex OG-Frame2U*

**Features**

- 2RU frame houses up to 20 openGear cards.
- Includes 1 x OG-PSU2U power supply and 1 x processor card with networking.
- Supports any mix of analogue, digital, video and audio modules in the same frame.
- Modular I/O panels for connector flexibility.
- Removable front door for easy fan servicing.
- Frames come standard with cooling.

### Sonifex OG-PSU2U Power Supply

The OG-PSU2U power supply can be used in the OG-Frame2U frame. This is a hot swappable 150W power supply. The specifications of this power supply are outlined in following sections. A single power supply can power the entire frame. Two power supplies can be used to provide additional redundancy on power supply or AC input failure.

## OG-DDA8B openGear 8 Output Balanced Digital Audio Distribution Amplifier, 2 Inputs & OG-DDA8U openGear 8 Output Unbalanced Digital Audio Distribution Amplifier, 2 Inputs

| Audio Specification For OG-DDA8B & OG-DDA8U | |
|---|---|
| Input Imped: | 110Ω ±20% balanced (OG-DDA8B)<br>75Ω ±5% unbalanced (OG-DDA8U) |
| Output Imped: | 110Ω ±20% balanced (OG-DDA8B)<br>75Ω ±5% unbalanced (OG-DDA8U) |
| Sample Freq Range: | 30-192kHz (i.e. including 32kHz, 44.1kHz, 48kHz, 64kHz, 88.2kHz, 96kHz, 176.4kHz & 192kHz) |
| Signal Level: | 3V/10V peak to peak min/max (OG-DDA8B)<br>Balanced min 0.5V ±20% peak to peak (OG-DDA8U) |
| **Equipment Type** | |
| OG-DDA8B: | 8 output balanced digital audio distribution amplifier, 2 inputs |
| OG-DDA8U: | 8 output unbalanced digital audio distribution amplifier, 2 inputs |
| **Physical Specifications** | |
| Dimensions | 33.5cm (W) x 7.5cm (D) x 1.2cm (H)(Raw): 13.2" (W) x 3" (D) x 0.5" (H) |
| Dimensions (Boxed): | 39cm (W) x 29cm (D) x 8.5cm (H) 15.4" (W) x 11.5" (D) x 3.4" (H) |
| Weight: | Nett: 0.15kg Gross: 0.4kg<br>Nett: 0.3lb Gross: 0.9lb |
| **Accessories** | |
| OG-R2-10A: | openGear single rear module using balanced WECO 3 pin I/O for OG-Frame2U |
| OG-R2S-10A: | openGear dual split rear module using balanced WECO 3 pin I/O for OG-Frame2U |
| OG-R2-10B: | openGear single rear module using unbalanced BNC I/O for OG-Frame2U |
| OG-R2S-10B: | openGear dual split rear module using unbalanced BNC I/O for OG-Frame2U |

The OG-DDA8B and OG-DDA8U digital distribution amplifiers are used for distributing balanced and unbalanced digital audio respectively, repeating both the audio data and the status information of the input whilst re-normalising to standard digital audio levels.

The OG-DDA8B has 2 selectable balanced digital audio inputs one of which can be distributed to 8 balanced digital audio outputs using Weco 3 pin connectors on the OG-R2-10A or OG-R2S-10A connector boards, available separately.

The OG-DDA8U has 2 selectable unbalanced digital audio inputs one of which is distributed to 8 unbalanced digital audio outputs using BNC connectors on the OG-R2-10B or OG-R2S-10B connector boards, available separately.

Applications include distributing audio from a digital mixing desk to multiple digital ▶

*OG-R2-10A Rear Module*

*OG-R2S-10A Rear Module*

*OG-R2-10B Rear Module*

*OG-R2S-10B Rear Module*

## openGear Cards

recorders, or feeding multiple studios with an output from a DAT machine.

Each board can accept input sample rates in the range of 30kHz - 192kHz, and bit rates of 16, 20 and 24 bit. So, they can be used for standard CD signal distribution at 16 bit 44.1kHz, as well as for high quality 24 bit 192kHz recording.

Sonifex openGear boards are fully compatible with the Dashboard control software that allows you to monitor and change the board settings via an ethernet interface to the rack controller card.

### OG-DDA8BS openGear 8 Output Balanced Digital Audio Distribution Amplifier, 2 inputs & Sample Rate Conversion

### OG-DDA8US openGear 8 Output Unbalanced Digital Audio Distribution Amplifier, 2 inputs & Sample Rate Conversion

NEW!

The OG-DDA8BS and OG-DDA8SUS digital distribution amplifiers with sample rate converters are used to convert a digital audio input to a different sample rate and to distribute it.

The OG-DDA8BS has 2 selectable balanced digital audio inputs (or input and one external sync input) one of which is distributed to 8 balanced digital audio outputs using Weco 3 pin connectors on the OG-R2-10A or OG-R2S-10A connector boards, available separately.

The OG-DDA8SUS has 2 selectable unbalanced digital audio inputs (or input and 1 external sync input) one of which is distributed to 8 unbalanced digital audio outputs on BNC connectors on the OG-R2-10B or OG-R2S-10B connector boards, available separately.

The output rate can follow the input (i.e. no sample rate conversion) or can be derived from an internal master clock, an external digital audio sync input or from one of two rack connected reference signals.

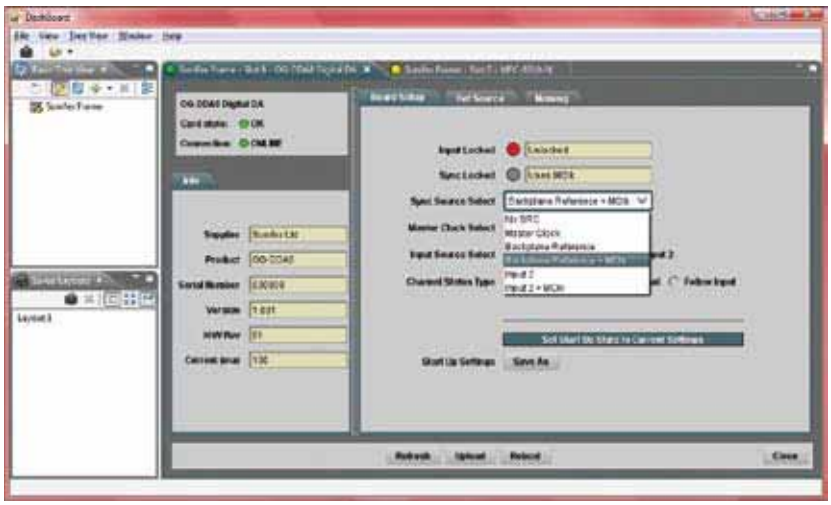
The reference signal can be a digital audio clock, a blackburst video reference or a tri-level HD video reference.

All rates from 32kHz to 192kHz are supported by the SRC and output circuitry. The cards have an option for the sample rate converter to fall back to the master clock frequency when the sync signal is not present.

Sonifex openGear boards are fully compatible with the Dashboard control software that allows you to monitor and change the board settings via an ethernet interface to the rack controller card.

| Audio Specification For OG-DDA8BS & OG-DDA8US | |
|---|---|
| Input Imped: | 110Ω ±20% balanced (OG-DDA8BS)<br>75Ω ±5% unbalanced (OG-DDA8US) |
| Output Imped: | 110Ω ±20% balanced (OG-DDA8BS)<br>75Ω ±5% unbalanced (OG-DDA8US) |
| Sample Freq Range: | 30-192kHz (i.e. including 32kHz, 44.1kHz, 48kHz, 64kHz, 88.2kHz, 96kHz, 176.4kHz & 192kHz) |
| Signal Level: | 3V/10V peak to peak min/max (OG-DDA8B)<br>Balanced min 0.5V ±20% peak to peak (OG-DDA8U) |
| **Equipment Type** | |
| OG-DDA8BS: | 8 output balanced digital audio distribution amplifier, 2 inputs & sample rate conversion |
| OG-DDA8US: | 8 output unbalanced digital audio distribution amplifier, 2 inputs & sample rate conversion |
| **Physical Specifications** | |
| Dimensions (Raw): | 33.5cm (W) x 7.5cm (D) x 1.2cm (H)<br>13.2" (W) x 3" (D) x 0.5" (H) |
| Dimensions (Boxed): | 39cm (W) x 29cm (D) x 8.5cm (H)<br>15.4" (W) x 11.5" (D) x 3.4" (H) |
| Weight: | Nett: 0.15kg Gross: 0.4kg<br>Nett: 0.3lb Gross: 0.9lb |
| **Accessories** | |
| OG-R2-10A: | openGear single rear module using balanced WECO 3 pin I/O for OG-Frame2U |
| OG-R2S-10A: | openGear dual split rear module using balanced WECO 3 pin I/O for OG-Frame2U |
| OG-R2-10B: | openGear single rear module using unbalanced BNC I/O for OG-Frame2U |
| OG-R2S-10B: | openGear dual split rear module using unbalanced BNC I/O for OG-Frame2U |

**The DashBoard Network Control & Monitoring system is a free application designed for remote control & monitoring of the open architecture, openGear™ platform via TCP/IP.**



*Dashboard Showing Board Setup Tab With Sync Source List*

*Dashboard Showing Reference Source Tab*

*Dashboard Showing Naming Tab*

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